

Journal of USN: 0022-1430

Vol 63 No 240

Downloaded from https://v

Published for the International Glaciological Society, Cambridge, UK



International Glaciological Society

High Cross, Madingley Road, Cambridge CB3 0ET

JOURNAL OF GLACIOLOGY

Chief Editor

JG Cogley

Emeritus Chief Editor

TH Jacka

Associate Chief Editors

P Bartelt SH Faria H Jiskoot F Pattyn

Scientific Editors

N Eckert HA Fricker CA Geiger NF Glasser R Greve SJ Jones M Koutnik B Kulessa H Pritchard TA Scambos S Rasmussen JM Shea D Shugar C Tijm-Reijmer M Tranter

INTERNATIONAL GLACIOLOGICAL SOCIETY

Founder: G Seligman

President

DR MacAyeal

Vice-Presidents

G Flowers F Pattyn S Sugiyama

Secretary General MM Magnússon

Membership and Accounts Manager LM Buckingham

INTERNATIONAL GLACIOLOGICAL SOCIETY

The Society was founded in 1936 to provide a focus for individuals interested in practical and scientific aspects of snow and ice. Membership is open to all individuals who have a scientific, practical or general interest in aspects of snow and ice study.

Papers on glaciology are printed in the *Journal of Glaciology*, which is published six times a year. The Society also publishes the *Annals of Glaciology*, a peer-reviewed, thematic journal, two to four times a year. The Society's news bulletin, *ICE*, is published three times a year.

The Society sponsors symposia, meetings and workshops in many countries throughout the year.

Journal of Glaciology publishes original articles and letters concerning scientific research into any aspect of ice and snow, and interactions between ice, snow, climate and other environmental phenomena including the biosphere and permafrost. Research techniques described in the Journal include, for example, field studies, remote sensing, computer modelling and laboratory studies. Research topics include the nature of and changes in mountain glaciers and ice sheets, including former ice sheets. For example, ice cores extracted from the glaciers and ice sheets reveal detailed information on past atmospheric composition and climate, and changes in the extent and thickness of the ice sheets are also related to climate change. The physical, chemical and crystallographic properties of ice and snow are included, especially but not only as they relate to the flow of ice and to past climate. The Journal also publishes studies of sea ice, and of icebergs, along with their interactions with climate on shorter time scales, and with the ocean. Snow and avalanche research is included in the Journal, with several recent articles investigating avalanche dynamics. Snow and ice on other planets is also within the realm of the Journal of Glaciology, as are studies of atmospheric ice.

Published for the International Glaciological Society, Cambridge, UK by Cambridge University Press

Printed in the UK by Bell and Bain Ltd.

Journal of GLACIOLOGY

CONTENTS Vol 63 No 240 2017

- 573 **Christian T. Wild, Oliver J. Marsh, Wolfgang Rack** Viscosity and elasticity: a model intercomparison of ice-shelf bending in an Antarctic grounding zone
- 581 W. Gajek, J. Trojanowski, M. Malinowski Automating long-term glacier dynamics monitoring using single-station seismological observations and fuzzy logic classification: a case study from Spitsbergen
- 593 **Ilona Välisuo, Thomas Zwinger, Jack Kohler** Inverse solution of surface mass balance of Midtre Lovénbreen, Svalbard
- 603 Dan Kluskiewicz, Edwin D. Waddington, Sridhar Anandakrishnan, Donald E. Voigt, Kenichi Matsuoka, Michael P. McCarthy Sonic methods for measuring crystal orientation fabric in ice, and results from the West Antarctic ice sheet (WAIS) Divide
- 618 Markus Engelhardt, Al. Ramanathan, Trude Eidhammer, Pankaj Kumar, Oskar Landgren, Arindan Mandal, Roy Rasmussen Modelling 60 years of glacier mass balance and runoff for Chhota Shigri Glacier, Western Himalaya, Northern India
- 629 Denis Voytenko, Timothy H. Dixon, David M. Holland, Ryan Cassotto, Ian M. Howat, Mark A. Fahnestock, Martin Truffer, Santiago De La Peña Acquisition of a 3 min, two-dimensional glacier velocity field with terrestrial radar interferometry
- 637 Sonam Futi Sherpa, Patrick Wagnon, Fanny Brun, Etienne Berthier, Christian Vincent, Yves Lejeune, Yves Arnaud, Rijan Bhakta Kayastha, Anna Sinisalo Contrasted surface mass balances of debris-free glaciers observed between the southern and the inner parts of the Everest region (2007–15)
- 652 **Mareike Wiese, Martin Schneebeli** Early-stage interaction between settlement and temperature-gradient metamorphism

- 663 Daniel Iliescu, Andrii Murdza, Erland M. Schulson, Carl E. Renshaw Strengthening ice through cyclic loading
- 670 Bergur Einarsson, Tómas Jóhannesson, Thorsteinn Thorsteinsson, Eric Gaidos, Thomas Zwinger
 Subglacial flood path development during a rapidly rising jökulhlaup from the western Skaftá cauldron, Vatnajökull, Iceland
- A. A. Leeson, J. M. Van Wessem, S. R. M. Ligtenberg, A. Shepherd, M. R. Van Den Broeke, R. Killick, P. Skvarca, S. Marinsek, S. Colwell Regional climate of the Larsen B embayment 1980– 2014
- 691 Douglas I. Benn, Jan Åström, Thomas Zwinger, Joe Todd, Faezeh M. Nick, Susan Cook, Nicholas R. J. Hulton, Adrian Luckman Melt-under-cutting and buoyancy-driven calving from tidewater glaciers: new insights from discrete element and continuum model simulations
- 703 Baojun Zhang, Zemin Wang, Fei Li, Jiachun An, Yuande Yang, Jingbin Liu
 Estimation of present-day glacial isostatic adjustment, ice mass change and elastic vertical crustal deformation over the Antarctic ice sheet
- 716 **Nicole Schaffer, Luke Copland, Christian Zdanowicz** Ice velocity changes on Penny Ice Cap, Baffin Island, since the 1950s
- 731 **Jorge Bernales, Irina Rogozhina, Maik Thomas** Melting and freezing under Antarctic ice shelves from a combination of ice-sheet modelling and observations *Letters*
- 745 **Robert D. Storrar, Andrew H. Jones, David J. A. Evans** Small-scale topographically-controlled glacier flow switching in an expanding proglacial lake at Breiðamerkurjökull, SE Iceland
- 751 Michael H. Meylan, Luke G. Bennetts, Roger J. Hosking, Elliot Catt On the calculation of normal modes of a coupled iceshelf/sub-ice-shelf cavity system