



Journal of
GLACIOLOGY

Vol 63 No 238

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

EE Adams

N Eckert

HA Fricker

CA Geiger

NF Glasser

R Greve

SJ Jones

B Kulessa

MA Lange

T Mölg

H Pritchard

TA Scambos

DM Rippin

JM Shea

M Tranter

WL Wang

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.

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

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 238 2017

- 199 **Nicolas J. Cullen, Brian Anderson, Pascal Sirguey, Dorothea Stumm, Andrew Mackintosh, Jonathan P. Conway, Huw J. Horgan, Ruzica Dadic, Sean J. Fitzsimons, Andrew Lorrey**
An 11-year record of mass balance of Brewster Glacier, New Zealand, determined using a geostatistical approach
- 218 **Marius Schaefer, Jose Luis Rodriguez, Matthias Scheiter, Gino Casassa**
Climate and surface mass balance of Mocho Glacier, Chilean Lake District, 40°S
- 229 **Stefano Picotti, Roberto Francese, Massimo Giorgi, Franco Pettenati, José M. Carcione**
Estimation of glacier thicknesses and basal properties using the horizontal-to-vertical component spectral ratio (HVSR) technique from passive seismic data
- 249 **Yoichi Ito, Florence Naaim-Bouvet, Kouichi Nishimura, Hervé Bellot, Emmanuel Thibert, Xavier Ravanat, Firmin Fontaine**
Measurement of snow particle size and velocity in avalanche powder clouds
- 258 **Daniel Falaschi, Tobias Bolch, Philipp Rastner, María Gabriela Lenzano, Luis Lenzano, Andrés Lo Vecchio, Silvana Moragues**
Mass changes of alpine glaciers at the eastern margin of the Northern and Southern Patagonian Icefields between 2000 and 2012
- 273 **Qinghua Ye, Jibiao Zong, Lide Tian, J. Graham Cogley, Chunqiao Song, Wanqin Guo**
Glacier changes on the Tibetan Plateau derived from Landsat imagery: mid-1970s – 2000–13
- 288 **Roman J. Motyka, Ryan Cassotto, Martin Truffer, Kristian K. Kjeldsen, Dirk Van As, Niels J. Korsgaard, Mark Fahnestock, Ian Howat, Peter L. Langen, John Mortensen, Kunuk Lennert, Søren Rysgaard**
Asynchronous behavior of outlet glaciers feeding Godthåbsfjord (Nuup Kangerlua) and the triggering of Narsaq Sermia's retreat in SW Greenland
- 309 **Donald Slater, Peter Nienow, Andrew Sole, Tom Cowton, Ruth Mottram, Peter Langen, Douglas Mair**
Spatially distributed runoff at the grounding line of a large Greenlandic tidewater glacier inferred from plume modelling
- 324 **E. L. Shroyer, L. Padman, R. M. Samelson, A. Münchow, L. A. Stearns**
Seasonal control of Petermann Gletscher ice-shelf melt by the ocean's response to sea-ice cover in Nares Strait
- 331 **Yushan Zhou, Zhiwei Li, Jia Li**
Slight glacier mass loss in the Karakoram region during the 1970s to 2000 revealed by KH-9 images and SRTM DEM
- 343 **Louis C. Sass, Michael G. Loso, Jason Geck, Evan E. Thoms, Daniel McGrath**
Geometry, mass balance and thinning at Eklutna Glacier, Alaska: an altitude-mass-balance feedback with implications for water resources
- 355 **Mareike Wiese, Martin Schneebeli**
Snowbreeder 5: a Micro-CT device for measuring the snow-microstructure evolution under the simultaneous influence of a temperature gradient and compaction
- 361 **Xiangke Xu, Baolin Pan, Guocheng Dong, Chaolu Yi, Neil F. Glasser**
Last Glacial climate reconstruction by exploring glacier sensitivity to climate on the southeastern slope of the western Nyaiqntanglha Shan, Tibetan Plateau
- 372 **Jean Rabault, Graig Sutherland, Olav Gundersen, Atle Jensen**
Measurements of wave damping by a grease ice slick in Svalbard using off-the-shelf sensors and open-source electronics
- Letter*
- 382 **Guang Liu, Huadong Guo, Shiyong Yan, Rui Song, Zhixing Ruan, Mingyang Lv**
Revealing the surge behaviour of the Yangtze River headwater glacier during 1989–2015 with TanDEM-X and Landsat images