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Polar ice, polar climate and polar change. Part 1: Land ice

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Cover illustration Scar Inlet Ice Shelf and Cape Disappointment glow in the austral midnight sun on 17 February 2016. This image was taken from a helium-filled balloon 2000 m above the ice. Specks on the ice where the cable extends to the surface are the tents of a research camp studying fast ice and land ice interactions led by Dr. Erin Pettit of University of Alaska Fairbanks. Photo credit: Ted Scambos, NSIDC, University of Colorado.

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PREFACE

This issue of *Annals of Glaciology* focuses on ice in the Arctic and Antarctic and the profound changes that are taking place. Nearly all of the 20 papers in *Polar Ice, Polar Climate and Polar Change*, covering, in sequence, the Antarctic Ice Sheet, the Greenland Ice Sheet and sea ice, make extensive use of satellite or airborne remote sensing – arguably the most important transformation in the study of polar ice in the past generation. Our ability to recognize, track, and diagnose climate-related changes in the cryosphere has hinged on developments in detection and measurement of ice from afar. This issue demonstrates state-of-the-art applications of remote sensing data to sea ice mapping and processes, ice flow, surface melt lakes and ponds, and sub-ice physical properties.

Additional studies center on application of the two other pillars of modern earth science – modelling and advanced *in situ* measurements. As cryospheric remote sensing has matured, and led to a research environment that is now data-rich, models and *in situ* measurements have come to the fore, and will be increasingly important in coming decades, as investigations seek to explain what has been observed from space, or strive to understand components of the system that cannot be detected remotely.

Annals of Glaciology is a peer-reviewed thematic journal published by Cambridge University Press on behalf of the International Glaciological Society. A team of 10 Scientific Editors (listed above) with wide expertise were responsible for assessing the papers in this issue. They acknowledge and are grateful for the work of a large number of peer-reviewers for their critical assessments and efforts to improve the manuscripts.

The topics of polar ice, polar climate, and polar change that led to this volume of *Annals of Glaciology* were the subject of an international symposium held in Boulder, Colorado on the 14th–19th of August, 2017, with 165 delegates attending. The conference was jointly sponsored by the University of Colorado National Snow and Ice Data Center, the Cooperative Institute for Research in Environmental Sciences, the Institute for Arctic and Alpine Studies and the National Center for Atmospheric Research.

Mark C. Serreze

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