

PREFACE

The theme of *Annals of Glaciology* 55(69) is 'Sea ice in a changing environment'. This issue encompasses papers on a variety of multi-disciplinary highly topical issues in marine glaciology. For example, in light of the continued reduction of Arctic summer sea-ice extent and the recent, albeit small, increase of Antarctic winter sea-ice extent, a number of papers in this issue investigate large-scale change and variability of sea ice in both polar regions in the search for mechanisms driving these processes. Nevertheless, to date, the mechanism of this Antarctic Paradox remains unclear. Recent investigations have shown that numerical climate models are not able to reproduce the observed change in Antarctic sea-ice extent, but are doing better for the Arctic region. Consequently, to explore sea ice in a changing environment and its interaction within the Earth system, further data are required, posing a challenge to both the modelling and the observational communities.

Sustained high-resolution but large-scale observations of critically important sea-ice properties are yet to be achieved. Similarly, first broad-scale retrievals of sea-ice thickness data, especially in the Antarctic, are yet to be verified against in situ observations. Reflecting on the active field of sea-ice research, 48 papers comprise this issue, including papers on advances in sea-ice analysis using remote sensing, modelling and paleo records; advances in instrumentation and observation methods; sea-ice and ecosystems modelling; snow on sea ice; and interactions between sea ice and ice sheets, ice shelves, icebergs, the ocean and atmosphere and the biosphere.

The Scientific Editors, the production team and, crucially, the reviewers are to be commended for their contribution to the publication of this issue.

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