



The Atlas of Submarine Glacial Landforms: Modern, Quaternary and Ancient

Julian A. Dowdeswell (1), Miquel Canals (2), Martin Jakobsson (3), Brian J. Todd (4), Evelyn K. Dowdeswell (1), and Kelly A. Hogan (5)

(1) Scott Polar Research Institute, University of Cambridge, Cambridge CB2 1ER, United Kingdom, (2) Department of Earth and Ocean Dynamics, CRG Marine Geosciences, University of Barcelona, Barcelona, Spain, (3) Department of Geological Sciences, Stockholm University, 106 91 Stockholm, Sweden, (4) Geological Survey of Canada, Natural Resources Canada, Dartmouth, Nova Scotia B2Y 4A2, Canada, (5) British Antarctic Survey, Natural Environment Research Council, Cambridge, CB3 0ET, United Kingdom

Twenty years ago, the international marine community brought together a first Atlas of Acoustic Images of the high-latitude geo-marine environment (Davies et al. 1997). The present Atlas is a new attempt to summarize the state of knowledge of high-latitude glacier-influenced systems, focusing on HR imagery derived from multibeam swath bathymetry and novel 2D and 3D seismic reflection tools. These new-generation techniques, aided by accurate global positioning, have revolutionized the imaging of the seafloor and subseafloor over the past two decades and have now been deployed widely in polar and subpolar waters, providing vast quantities of new data. It is, therefore, timely to provide a compilation of the variety of submarine glacial and related landforms, together with their stratigraphic setting where possible, for scientific, technological, environmental and economic reasons.

The glacial imprint on the modern seabed and palaeo-shelf surfaces, buried in glacial-sedimentary depocentres, can now be imaged better than ever before using the above techniques, providing novel insights into present and past environmental conditions and sedimentary architecture. The understanding of polar regions and their changing ice cover is of enhanced significance as they are both a key driver of global change and important responders to it. Finally, industry is increasingly interested on the dimensions and architecture of glacial sedimentary depocentres on present and past continental shelves because of the hydrocarbon potential of some glacial-sedimentary systems. The Atlas consists of a comprehensive series of over 180 contributions that describe, illustrate and discuss the full variability of landforms found on the high-latitude, glacier-influenced systems, and is organised in terms of their positions on a continental margin into those from: (1) fjords, (2) continental shelves and plateaus, and (3) the deep margin and basins beyond. The Atlas has been published by the Geological Society of London in 2016 as Memoir 46.