

Ocean and climate changes in polar and sub-polar environments: proceedings from the 2010 IODP-Canada/ECORD summer school

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PREFACE



The European Consortium for Ocean Drilling Program (ECORD), the Canadian Consortium for Ocean Drilling (CCOD), the Network of the Universités du Québec (UQ), the Université du Québec à Montréal (UQAM) and GEOTOP sponsored, in 2010, a summer school entitled 'Ocean and climate changes in polar and sub-polar environments'. This summer school took place from 27 June to 12 July in Rimouski, Québec city and Montréal (Quebec, Canada) and was attended by nineteen students and postdoctoral fellows from seven countries: Canada, France, Germany, UK, Serbia, Portugal and the USA. Lectures, hands-on laboratory exercises and laboratory visits were conducted at the Institut des Sciences de la Mer de Rimouski (ISMER), Institut National de la Recherche Scientifique – Centre Eau Terre Environnement (INRS-ETE) and UQAM, in addition to two field trips and a short geological and geophysical cruise on board the R/V Coriolis II in the St Lawrence Estuary and Saguenay Fjord. During the summer school, more than twenty researchers gave lectures on the use of several paleoceanographic and geophysical techniques to reconstruct ocean and climate changes in polar and sub-polar environments. Some of these lectures are presented as short review papers in this volume. They are intended to portray a brief, but state-of-the-art overview of an array of techniques applied to Arctic and sub-Arctic environments, as well as the geological background information needed by the summer school participants to put the scientific expedition and fieldwork into context.

The volume begins with a view on the great challenges and key issues to be addressed in the Arctic Ocean (Stein) in the forthcoming years and is followed by a review (O'Regan) on Late Cenozoic paleoceanography of the Central Arctic. The two subsequent papers (St-Onge *et al* and de Vernal *et al*) deal with the oceanographic, paleoceanographic and geological context of the Saguenay Fjord, and St Lawrence Estuary and Gulf. The subsequent set of papers review the use of planktonic foraminifers (Eynaud), diatoms (Crosta) and dinocysts (de Vernal and Rochon) in polar or sub-polar environments. These articles are followed by a paper on transfer functions (Guiot) summarizing the different approaches used to reconstruct past environmental conditions from micropaleontological proxy data. Two papers on geochemical and isotopic proxies are then presented and related to either foraminifera

isotopic records (Hillaire-Marcel) in high northern latitudes or changes in ocean circulation and weathering inputs derived from radiogenic isotopes (Frank). The volume concludes with a paper on the application of visible/near infrared derivative spectroscopy to Arctic sediments (Ortiz).

All the papers published in this volume benefited from the reviews of at least two reviewers, whom we thank for their valuable time and comments. We also thank the crew of the Coriolis II, and the many scientists, participants and volunteers who contributed to the summer school and made it a great success. In addition to GEOTOP and UQAM, the following institutions contributed to the organization of the summer school: ISMER, INRS-ETE, the Geological Survey of Canada, and REFORMAR. Finally, we thank H el ene Gaonac'h (UQAM) for coordinating the summer school and Anne de Vernal (UQAM) for her leadership throughout the summer school.

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