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Preface

30th International Liège Colloquium on Ocean Hydrodynamics

Liège, Belgium, May 4–8 1998

Hydrodynamical and ecosystem processes in ice-covered seas of the Southern and Northern Hemispheres

The International Liège Colloquium on Ocean Hydrodynamics is organized annually. The topic differs from year to year in an attempt to address, as much as possible, recent problems and incentive new subjects in physical oceanography.

Assembling a group of active and eminent scientists from various countries and often different disciplines, the Colloquia provide a forum for discussion and foster a mutually beneficial exchange of information opening on to a survey of recent discoveries, essential mechanisms, impelling question marks and valuable recommendations for future research.

The 1998 Colloquium was devoted to the understanding of the hydrodynamical and ecosystem processes in ice-covered seas of the Southern and Northern Hemispheres. At the micro- and mesoscales, the ice-covered seas provide some of the most extreme examples of the hydrodynamical forcing of pelagic ecosystems. Hence, in ice-covered seas, there is often exceptionally high coupling between hydrodynamical and ecosystem processes. The presence of sea ice influences the fluxes of heat, gases, and matter to and from the atmosphere. This plays a key role in regulating fluxes of greenhouse gases (CO_2, DMS). The processes of ice formation, melting, break-up, and retreat strongly influence the vertical structure of the water column and the rates of nutrient supply, primary production, grazing, and sedimentation. In addition, at the meso- and macroscales, the ice-covered seas are the sites of specific coupling between atmospheric forcing and ocean circulation, which in turn controls the 3-dimensional distributions of organisms.

The 30th International Liège Colloquium on Ocean Hydrodynamics provided the opportunity for reviewing recent developments on processes that connect hydrodynamics and ecosystems in ice-covered seas. These included: the physical processes and fluxes that control and structure the ice and under-ice environments; the responses of ice- and water-column ecosystems to physical forcing; the effects of ice congelation and crystal structure on the associated biota; the thermodynamics of exchanges between ice and water and their effects on pelagic ecosystems; the interactions between ocean and atmosphere, including ultra-violet radiation and production of DMS; the role of sedimentation on the structure and functioning of benthic communities; the pathways of biogenic carbon fluxes and their hydrodynamical regulation.

The 30th Liège Colloquium provided a forum for discussing different approaches, including: field sampling, series resulting from long-term moorings and drifting platforms, remote sensing, laboratory experiments, and modelling.

The Scientific Committee and the participants to the 30th Liège Colloquium wish to express their gratitude to the Ministry of Education and Research and the National Science Foundation of Belgium, the University of Liège, the Scientific Committee on

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