Preface

This special issue of Dynamics of Atmospheres and Oceans contains selected papers presented at the 4th International Symposium on Stratified Flows which was held in Grenoble from June 29 to July 2, 1994, sponsored by the IAHR and cosponsored by IAPSO, IAMAS and ASCE. A total of 165 papers have been presented at this symposium (selected out of 265 abstracts submitted) the texts of which are collected in the four volumes of the Preprints. The 53 papers (including six based on general lectures) collected in this issue have been selected through a rigorous reviewing procedure and are thoroughly revised and completed versions of the papers contained in the preprints.

The stratified flow symposium is held every six to eight years and this long time interval assures that each meeting is a land mark. The scientific quality of the papers accepted is very high indeed and it is clear that the progress made over the past years on internal waves, stratified turbulence, mixing and refined modeling for instance is noteworthy. Numerical simulations, experimental and observational techniques have considerably advanced and allow to study phenomena in greater detail. We are also able to follow in laboratory studies the spatial and time evolution through image analysis. All this contributes to the understanding of the physical processes and to the development of better predictive models. "Comprendre pour agir".

The Grenoble symposium emphazised geophysical fluids more than has been done in the previous symposia. The papers represented in this issue cover, therefore, fundamental aspects of stratified fluids in a context of geophysical applications with the topics ranging from internal waves, turbulence and mixing in oceans, lakes and atmospheres. A large number of papers is on internal waves showing a strong interest and notable progress on wave breaking and their effect on vertical transport. Numerical simulations and modeling of stratified turbulence have progressed substantially accompanied for instance also by refined experiments on wake collapse and the resulting quasi two-dimensional turbulent state. Mixing mechanisms and mixing efficiency across density interfaces in particular are now better understood and transport coefficients are obtained with better accuracy. The following collection of papers reflects the present state of the art in stratified fluids and should serve as a valuable reference source.

The offer by Elsevier to publish this special issue of Dynamics of Atmospheres and Oceans is greatly appreciated and we hope that it will receive a large audience of interested readers.

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Guest Editors