

CHALLENGES AND PERSPECTIVES IN NUMERICAL METHODS FOR ATMOSPHERE AND OCEAN MODELLING

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ABSTRACT

Earth's climate changes represent one of the greatest challenges of our times. To achieve fast and accurate forecasts in weather, climate, and ocean dynamics, advanced numerical and computational methodologies are essential, given the high computational demands of solving systems governed by complex partial differential equations. The highlight of this minisymposium concerns the development and implementation of computational strategies in the field of geophysical fluid dynamics.

Contributions related to efficient numerical high-fidelity techniques, such as finite elements, finite volumes, discontinuous Galerkin, and spectral element methods, are welcome, as well as to the development of surrogate models addressing complex phenomena in oceanic and atmospheric flows (including phenomena like turbulence, compressibility and multi-phase interfaces), represent the target of this minisymposium. Over the last decade, the rapid development of efficient and accurate numerical methods for geophysical applications has emerged as a new frontier in scientific computing. This minisymposium is going to explore the latest advancements and new directions and perspectives in this field.