Ocean Dynamics

Call for Papers for a Topical Collection on

Multi-scale Modeling of Coastal, Shelf and Global Ocean Dynamics

In contemporary ocean science, modeling systems that integrate understanding of complex multi-scale phenomena and utilize efficient numerics are paramount. Many of today's fundamental ocean science questions involve multiple scales and multiple dynamics. A new generation of modeling systems would allow to study such questions quantitatively, by being less restrictive dynamically and more efficient numerically than more traditional systems. This is why Ocean Dynamics devotes a topical collection to this multi-scale modeling topic.

Articles for this topical collection may address computational issues and/or present applications. Computational contributions deal with aspects of multi-scale (un)-structured mesh numerical modeling of ocean flows and dynamics, aiming to widen the range of resolved scales in space and time. They include finite volume and finite element discretizations, high-order schemes, preconditioners, solver issues, grid generation, adaptive modeling, data assimilation, coupling with atmospheric or biogeochemical models, distributed computing, etc. Contributions on unstructured meshes and related approaches, in particular multi-grid embedding, nesting systems, wavelets and other multi-scale decompositions, which pursue similar objectives, are most welcome. Approaches for the study of multi-resolution results, visualization, optimization, model evaluations, and uncertainty quantification are also much appreciated.

For dynamical applications, domains of interest range from estuaries to the global ocean, including coastal regions and shelf seas. Multi-scale modeling of physical, biological, chemical, and sea ice processes as well as air-sea interactions are welcome, including hydrostatic, non-hydrostatic, turbulent or sea surface dynamics. A number of submissions are expected from presentations made at the 9th and 10th International Workshops on Multi-scale (Un)-structured mesh numerical Modeling for coastal, shelf, and global ocean dynamics (17-20 August 2010 at MIT, Cambridge, USA and 22-25 August 2011 at Bremerhaven, Germany), but all other submissions on the topic are equally welcome.

Manuscripts must be submitted **before December 15, 2011,** through Springer's electronic editorial manager system. Topical collection articles are published immediately after they are accepted. The cover letter and the front page of every manuscript must clearly mention that the submission is intended for the present topical collection and be submitted under the article type **MSM2011** in the Editorial Manager System of Ocean Dynamics so that it can be directed by the chief-editor to the relevant topical collection Guest-Editors, who are:

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