Computations in environmental and geophysical fluid mechanics

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ABSTRACT

Many flows that occur in geophysical and environmental fluid mechanics and dynamics exhibit a wide range of temporal and spatial scales and require high fidelity resolution over large complex domains over long periods of time. Computational methods for such flows have gained significant attention and have undergone considerable developments due to their potential societal impacts in recent years. In this minisymposium we seek to examine the latest developments in solving geophysical and environmental fluid mechanics problems. Topics of interest include:

* Model development and application.
* Coupling of flow and transport processes and models.
* Flow and transport in riverine, estuarine and coastal systems.
* Pollution and sediment transport.
* Climate change.
* High-performance computing and parallelization strategies.
* Error analyses, verification, and validation.
* Algorithms and criteria for generation of unstructured meshes.
* Fluid-structure interactions.
* Development of novel discretization methods in both spatial and temporal domains.
* Machine learning techniques and applications for environmental fluid flows.