**'Unified' ocean/land/river modelling using compatible unstructured meshes**

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Coupling between physical processes in conventional Earth System Models is often constrained and simplified by details of the underlying model configuration – model components generally exist on different computational grids, use varying numerical discretisations and are not typically resolved at the fine spatial and/or temporal scales needed to capture the dynamics of interface regions, such as coastal environments. In this work, we describe a new 'unified' approach to coupled ocean/land/river modelling, in which all components are represented on a common unstructured global mesh, and employ compatible numerical methods and coupling strategies. This new initiative is an extension of the Department of Energy's E3SM framework, designed to enhance the representation of coastal dynamics in global-scale ESMs. Initial work on a 'unified' representation of the coastal environment is reported, focusing on the development of an unstructured model for the US mid-Atlantic coastal zone as part of the Integrated Coastal Modelling (ICoM) effort.