



UK Environmental Prediction – integration and evaluation at the convective scale

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Traditionally, the simulation of regional ocean, wave and atmosphere components of the Earth System have been considered separately, with some information on other components provided by means of boundary or forcing conditions. More recently, the potential value of a more integrated approach, as required for global climate and Earth System prediction, for regional short-term applications has begun to gain increasing research effort. In the UK, this activity is motivated by an understanding that accurate prediction and warning of the impacts of severe weather requires an integrated approach to forecasting. The substantial impacts on individuals, businesses and infrastructure of such events indicate a pressing need to understand better the value that might be delivered through more integrated environmental prediction.

To address this need, the Met Office, NERC Centre for Ecology & Hydrology and NERC National Oceanography Centre have begun to develop the foundations of a coupled high resolution probabilistic forecast system for the UK at km-scale. This links together existing model components of the atmosphere, coastal ocean, land surface and hydrology. Our initial focus has been on a 2-year Prototype project to demonstrate the UK coupled prediction concept in research mode.

This presentation will provide an update on UK environmental prediction activities. We will present the results from the initial implementation of an atmosphere-land-ocean coupled system, including a new eddy-permitting resolution ocean component, and discuss progress and initial results from further development to integrate wave interactions in this relatively high resolution system. We will discuss future directions and opportunities for collaboration in environmental prediction, and the challenges to realise the potential of integrated regional coupled forecasting for improving predictions and applications.