



UK Environmental Prediction – integration and evaluation at the convective scale

Huw Lewis (1), Gilbert Brunet (1), Chris Harris (1), Martin Best (1), Andrew Saulter (1), Jason Holt (2), Lucy Bricheno (2), Ashley Brerton (2), Nick Reynard (3), Eleanor Blyth (3), and Alberto Martinez de la Torre (3)

(1) Met Office, Exeter, United Kingdom (huw.lewis@metoffice.gov.uk), (2) Centre for Ecology & Hydrology, Wallingford, United Kingdom, (3) National Oceanography Centre, Liverpool, United Kingdom

It has long been understood that accurate prediction and warning of the impacts of severe weather requires an integrated approach to forecasting. This was well demonstrated in the UK throughout winter 2013/14 when an exceptional run of severe winter storms, often with damaging high winds and intense rainfall led to significant damage from the large waves and storm surge along coastlines, and from saturated soils, high river flows and significant flooding inland. The substantial impacts on individuals, businesses and infrastructure 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, Centre for Ecology & Hydrology and 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 on a 2-year Prototype project will demonstrate the UK coupled prediction concept in research mode, including an analysis of the winter 2013/14 storms and its impacts. By linking science development to operational collaborations such as the UK Natural Hazards Partnership, we can ensure that science priorities are rooted in user requirements.

This presentation will provide an overview of UK environmental prediction activities and an update on progress during the first year of the Prototype project. We will present initial results from the coupled model development and discuss the challenges to realise the potential of integrated regional coupled forecasting for improving predictions and applications.