



A coupled atmospheric-hydrology model for flood forecasting

P.M. Younger (1), K.J. Beven (1), A.M. Gadian (2), J.E. Freer (1)

(1) Department of Environmental Science, Lancaster University, UK, (2) School of Earth and Environment, University of Leeds, UK (p.younger@lancaster.ac.uk)

There are many of small catchments around the world that cannot provide long-enough lead-times, for adequate flood warnings. With this in mind, a coupled atmospheric-hydrology model is being created to provide efficient warnings, and improved lead-times for flood forecasting. The model makes use of forecasts from the United Kingdom Meteorological Office Unified Model version 5.5. These forecasts are down-scaled from a global forecast, to mesoscale, to 4km, 1km and 250m resolution. The lower resolution forecasts are used to nudge the higher resolution ones, and finally a prediction from the highest resolution is passed as inputs into the hydrological component of the model, dynamic TOPMODEL. The atmospheric and hydrologic components of the model are linked by a common SVAT scheme, used to aid better the passing of data from one to another. The final output can then be in the form of a discretised domain showing probable flood areas.