Probabilistic impact-based approaches for flood forecasting and prediction

Steven Cole

UK Centre for Ecology and Hydrology, Walingford, UK

scole@ceh.ac.uk

ABSTRACT

Flooding affects more people globally than any other hazard with the number of major flood events significantly increasing in recent decades, and accounting for over 20% of disaster losses during 2000-19 (UNDRR, 2019). Recent developments in flood forecasting and management have increasingly taken a risk-based approach that combines the *likelihood* of an event occurring and *with* the severity of the potential impacts. Commonly the likelihood of flooding is derived from new ensemble or probabilistic modelling systems and impacts derived using GIS approaches.

Such Impact-based Forecasting and Warning (IbFW) methods have been promoted by the World Meteorological Organisation and are increasingly used by international, national and regional organisations. For example, by humanitarian organisations to support Forecast-based Action or Forecast-based Financing to release funds ahead of disasters. Similar flood risk methods can also be applied for long-term climate predictions and planning.

This talk will present some of the UK developments in this area, including national scale ensemble flood forecasting using the Grid-to-Grid (G2G) distributed hydrological model and applications such as the Surface Water Flooding Hazard Impact Model and PREDICTOR (PREDICTing flooding impacts from cOnvective Rainfall).