

SUCCESS IN ADAPTIVE FLOOD FORECASTING: AN EVALUATION OF THE OPERATIONAL SYSTEM AT DUMFRIES

Peter Young, Keith Beven, Wlodek Tych and Katharine Nolan
Environment Lancaster, Lancaster University, Lancaster
k.beven@lancaster.ac.uk

A flood forecasting system for the 1000 km² catchment of the River Nith developed by Lancaster University has been in operation since 1991. The system is based on rainfall-flow and level-level linear transfer functions, with a simple bilinear power law nonlinear input filter and integrated random walk adaptive gain. An unusual feature of the system is the use of non-optimal transfer functions with artificial time delays that allow forecasts to be made with a lead time extended by 2 hours. The system and base transfer functions are evaluated for an additional set of storm data collected since 1991. It is shown that the original system has performed well, but that it may be possible to improve the performance of the nonlinear filter by recently developed nonparametric methods of nonlinear identification.