



Flood risk estimation using stochastic equivalents to distributed flood warning system.

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Recent improvements in both flood plain characterisation and computational capabilities have made the use of distributed models of flood inundation more common. However, problems remain in the on-line application of such models. There are still uncertainties associated with the identifiability of parameters, with the computational burden of calculating distributed estimates of predictive uncertainty, and with the adaptive use of such models, with many state variables, for operational real-time flood inundation forecasting.

These problems can be solved when Data Based Mechanistic modelling techniques are used in conjunction with the distributed model. In this paper we discuss problems of the non-identifiability of the distributed flood inundation model, we describe the derivation of the simplified Data Based Mechanistic model as a reduced dimension representation of the distributed flood inundation model, and we propose a methodology for combining the information derived from both DBM and distributed models to derive on-line updated flood risk maps at strategic locations along the river. The approach is illustrated using as an example a 60 km reach of the River Severn, UK.