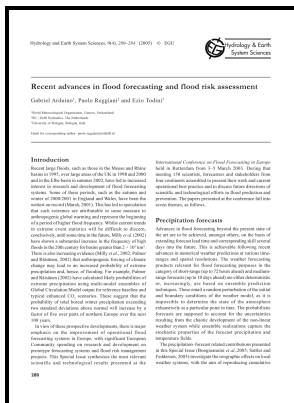


# Investigation and application of flood prediction and forecasting models on catchments in the Severn and Trent basins.

University of Birmingham - Ensemble flood forecasting: A review



Description: -

-investigation and application of flood prediction and forecasting models on catchments in the Severn and Trent basins.

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Notes: Thesis (Ph.D) - University of Birmingham, Dept of Civil Engineering.

This edition was published in 1979



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Real

This paper aims to provide a perspective on developments in the UK over the last twenty years, initially by reviewing models in current operational use but progressing to discuss updating methods, the use of weather radar and lastly the introduction of integrated flood forecasting systems. Multi-model, multi-discipline approaches are recommended in order to further advance this research field. The first is the extent to which the areal rainfall distribution can be determined from point measurements and the second is the degree to which errors in the assessment of true catchment rainfall affect the decision outcome.

Ensemble flood forecasting: A review

The paper reports on three empirical studies which focus on these particular problems.

The investigation and application of flood prediction and forecasting models on catchments in the Severn and Trent basins. (1979 edition)

Updating methods allow real-time measurements, for example of river level received via telemetry, to be used to improve model performance.

Flood inundation modelling: A review of methods, recent advances and uncertainty analysis

Ensemble flood forecasting: A review

Most recently, flood forecasting systems have been developed capable of coordinating the construction of forecasts at many points across a possibly complex region and being generic in their use of models and their configuration to any set of river networks without expensive recoding.

### **Flood inundation modelling: A review of methods, recent advances and uncertainty analysis**

It addresses how uncertainty is analysed in this field with the various approaches and identifies opportunities for handling it better. Anderson JL, Burns JC, Curran JC, Fox IA, Goody NP, Inglis T, Sargent RJ 1962 A review of flood warning schemes on mainland Scotland. It explores their advantages and limitations, highlights the most recent advances and discusses future directions.

### **Flood inundation modelling: A review of methods, recent advances and uncertainty analysis**

However, these methods are reviewed with reference to techniques developed elsewhere and which are in use operationally, thereby providing an overview of the present state-of-the-art in the UK. Weather radar allows point measurements of rainfall, from an often sparse raingauge network, to be complemented by spatially continuous measurements of the rainfall field and thereby, provide improved input to flood forecasting models.

### **The significance of rainfall in the study of hydrological processes at basin scale**

Prospects for future improvement are considered, focusing on the potential value of digital terrain models to formulate a new generation of distributed model appropriate for operational use in combination with radar rainfall and satel-lite-derived thematic data, for example on land-use. This paper reviews state-of-the-art empirical, hydrodynamic and simple conceptual models for determining flood inundation. Operational medium range flood forecasting systems are increasingly moving towards the adoption of ensembles of numerical weather predictions NWP , known as ensemble prediction systems EPS , to drive their predictions.

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