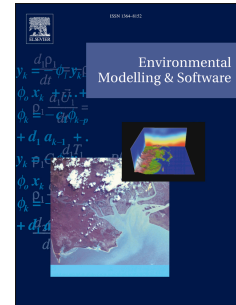


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Development of a system for automated setup of a physically-based, spatially-distributed hydrological model for catchments in Great Britain

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1 Development of a system for automated setup of a
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6 **Abstract**

The use of physically-based spatially-distributed models to solve problems in hydrology has been limited by their intensive data and setup time requirements. We have therefore created a system that enables the automatic setup of a robust, physically-based spatially-distributed SHETRAN model for any catchment, gauged or ungauged, in Great Britain. National-scale datasets for topography, soil, landuse, geology and climate have been collated, processed and stored to allow rapid retrieval and configuration of catchment models with minimal user-intervention. These maps can be easily replaced by national datasets of other countries or global datasets, ensuring the system's international transferability. A graphical user interface has been developed to facilitate the model setup process. The resultant system, SHETRAN-GB, has the potential to significantly aid the deployment of SHETRAN for addressing important issues relating to water resources, hydrological extremes and climate change, either for individual or multiple catchments.

7 *Keywords:* SHETRAN, Physically based, hydrological model, data, GUI

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