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How far can we go in distributed hydrological modelling?

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*2001 EGS Dalton medallist K.J. Beven is Professor of Hydrology at Lancaster University. He has made fundamental and innovative contributions over many years
to model development and modelling technology and has received many prestigious awards in recognition of his international reputation, including the AGU Horton
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Abstract. This paper considers distributed hydrological models in hydrology as an expression of a pragmatic realism. Some of the problems of distributed modelling are discussed including the problem of nonlinearity, the problem of scale, the problem of equifinality, the problem of uniqueness and the problem of uncertainty. A structure for the application of distributed modelling is suggested based on an uncertain or fuzzy landscape space to model space mapping. This is suggested as the basis for an Alternative Blueprint for distributed modelling in the form of an application methodology. This Alternative Blueprint is scientific in that it allows for the formulation of testable hypotheses. It focuses attention on the prior evaluation of models in terms of physical realism and on the value of data in model rejection. Finally, some unresolved questions that distributed modelling must address in the future are outlined, together with a vision for distributed modelling as a means of learning about places.

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