

Hine, D.J. and Hall, J.W. 2006a, Convex analysis of flood inundation model uncertainties and info-gap flood management decisions. In: J.K. Vrijling et al. (Editors), Stochastic Hydraulics '05, Proc. 9th Int. Symp. On Stochastic Hydraulics. IAHR, Nijmegen, The Netherlands.

Abstract

In this paper Information-gap decision theory is introduced to the field of flood management decisions, as an alternative to established probabilistic or fuzzy approaches. Decisions are made using Ben-Haim's info-gap approach which focuses on robust decision making in cases of severe uncertainty, using a satisficing approach. This utilises the idea of equifinality, that several parameter sets may exist which provide some form of acceptable model, rather than a single optimum parameter set. Such an approach avoids the need to impose any form of normalised measure function across parameter space, a feature particularly useful when considering extreme events. A simple example is used to illustrate implementation of this methodology in fluvial river inundation modelling, where energy loss is used as a constraining factor for uncertainty. A decision is then shown by trading off immunity against pernicious uncertainty and opportunity arising from propitious uncertainty.