



## Thoughts on a process-based catchment classification

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The alternative to complex model building are classification and similarity concepts which, generally speaking, can be profitably used when the processes are not fully understood and this, often, is the case in catchment hydrology. Contrasting different aquifers, catchments and river reaches based on their characteristics has been termed comparative hydrology (McDonnell and Woods, 2004) and the purpose is to learn from the similarities and dissimilarities. The classification approach may assist to provide context of hydrological analyses to reduce some of the ambiguity that is usually present. Classification has been widely used in hydrological estimation of floods and low flows in ungauged catchments (e.g. Merz and Blöschl, 2003; Laaha and Blöschl, 2006) and it is increasingly used in other areas of hydrology, such as soil hydrology (Schneider et al., 2007). de Marsily et al. (2005) discussed the representation of aquifer heterogeneity by a combined facies/stochastic approach to "bring in more geology into stochastic models". They suggested a catalogue of aquifer types to be compiled, perhaps with UNESCO taking the lead. Wagener et al. (2007) discussed classification in catchment hydrology, including catchment grouping and similarity, from a more philosophical vantage point. The classification methods differ in terms of their data needs, from their classical fluid dynamical counterparts to simple phenomenological clustering. This paper will attempt to review these classification concepts from a process based perspective. Perhaps classification based predictions may not be as accurate as those based on complex models but classification promises to provide order in an otherwise seemingly random collection of case studies.

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