



## **An integrated catchment model for my developing country catchment, or, choosing a bride for my son**

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The development of integrated catchment models and decision support systems to aid natural resources management has become a natural playground for researchers in the developed world, with different products being put on the market or as open access software. On the other hand, applications for the bulk of the models lag behind in the developed world where detailed information for supporting the more complex, physics based models is scarce. While it encourages multidisciplinary discourse, replicating catchments in an integrated manner with a prototype of reality calls for careful definition of the problem and possible modes of solution, if the modelled results are to gain credibility with policy makers. The issues that have to be resolved are mainly scale, points of integration, parameterization, sensitivity, and input data deficiencies. Input data deficiencies are exacerbated in developing countries, and the choice of an integrated catchment model may rest entirely on data availability. Socio-economic aspects also play a pivotal role in what model is eventually deemed suitable. The metaphor about the bride alludes to the fact that in developing countries, local cultural constraints and social norms sometimes dictates or limits the pool in which a man can select a bride, while in the first world, all the world may be a sample set. Thus with models, local constraints sometimes shrink the sample set. This paper presents the considerations governing the choice of an integrated catchment model for the Mupfure catchment of Zimbabwe. The WADss framework built in ICMS and originally developed at the Australian National University is identified as a suitable model. This is mainly because the ICMS in which it is built provides an environment in which one

can build up a framework of one's view of the tools needed to give information about, and to solve an assessment or management problem. The frameworks are thus to some extent subjective, the understanding of the developer playing a large role in how they eventually turn out. In a sense, it is the modeller's definition and interpretation of the problem that will affect what emphasis is placed on which aspects. However, the basic concepts are generic, and the modelling framework developed is not an end in itself, as new information on the real life system can enable major modifications, in a dynamic fashion. This paper argues that such an approach is a good option for the Mupfure catchment.