

Interactive comment on “HESS Opinions “The art of hydrology”¹” by H. H. G. Savenije

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We enjoyed reading the opinion paper by Savenije (2008). We agree with the idea that the goal of science should be to develop better models, which should be "completely flexible, transparent and tailor-made" for the catchment under investigation. Two problems which could arise from this approach are 1) the vast number of emerging models

¹Invited contribution by H. H. G. Savenije, the EGU Henry Darcy Medallist 2008 for outstanding contributions to Hydrology and Water Resources Management.

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which makes testing and reproduction of results difficult and 2) the process of model development is time consuming, and often duplicate functionality is found in existing models..

We would like to suggest a possible solution to these problems by rising the question of whether it is necessary to "codify the dominant mechanism" each time a certain approach/theory is applied. Since the number of dominant mechanisms is limited and they are usually expressed with a set of standard equations, existing computer code could be reused to efficiently arrange a tailor-made model to test the underlying hypotheses. This requires that code describing the most important dominant processes is easily available and can be verified. In our opinion, the most efficient way to guarantee code availability and verifiability is the availability of a completely open and freely accessible and well documented hydrological software repository. We pointed out in (Buytaert 2008 et. al) that the availability of software routines, functions and libraries has a great potential to carry hydrology in the direction described in (Savenije 2008). Testing and reproduction of results would be much easier as the established code is less likely to contain errors. The main task would then shift to checking that the existing code has been combined in a sound way. Model development would also be much faster because, eventually, modellers would be familiar with the emerging hydrological standard library. Ideally, this standard library could be introduced early in hydrological education. A more detailed introduction to open source software and its potential for hydrology/hydroinformatics is given by Harvey and Han (2002). We have made a first step in the direction of a free standard library for hydrology with an easy-to-use implementation of TOPMODEL in the environment R (Ihaka and Gentleman, 1996). Efforts are currently ongoing to implement HBV and other models.

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Ihaka, R. & Gentleman, R. R: A Language for Data Analysis and Graphics Journal of Computational and Graphical Statistics, 1996 , 5 , 299-314

Savenije, H. H. G. HESS Opinions "The art of hydrology" Hydrol. Earth Syst. Sci. Discuss., Copernicus Publications, 2008 , 5 , 3157-3167

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