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Hydrology and Earth System Sciences Discussions

Interactive comment on "The role of catchment classification in rainfall-runoff modeling" *by* Y. He et al.

Y. He et al.

yi.he@uea.ac.uk

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I take this opportunity to thank Prof. Sivapalan for his very critical but constructive comments. I was for a short while taken aback by his critics but quickly realised his intension is to push scientists to publish high-quality work.

Three general issues were pointed out in his comments:

1. Title and structure of the paper ("I was misled by the title. . . a rambling discourse")

The title could be changed to 'A REVIEW, COMPARISON AND CONTRAST OF CATCHMENT CLASSIFICATION METHODS'. Some irrelevant parts such as "2.1.2 Periodic table of chemical elements" will be removed. Bloschl and Sivapalan (1995),

Sivapalan et al (1987, 1990, 2011) are very good articles. They are very well organised and provide comprehensive review on hydrologic similarity. They will be studied and reflected in this paper along with a number of most current articles related to catchment classification.

2. Linneaean and Statistical catchment classification ("By dividing into Linneaean and statistical (clustering) approaches to classifications, I felt they are mixing up concepts/theory and methods.").

Linnaean catchment classification (LCC) is based directly on physiographic properties and climatic conditions over a catchment, while the Statistical catchment classification (SCC) is not. The latter is implemented by linking the model parameters with the catchment descriptors; transferring the parameter space to the space of catchment descriptors (in many cases, will involve reduction of a data matrix or the space dimension); or numerical clustering. SCC is a collection of methods of explanatory and exploratory analysis of multivariate data by making use of a suite of statistical approaches. SCC is often associated with hydrological modelling in ungauged catchments or regionalization. The essence of SCC and its major difference from LCC is in its statistical interpretation of the relationship between model parameters and catchment characteristics.

3. Tables/Figures are missing ("There is not even one figure, table, or schematic in the paper. . .").

Tables/Figures should be used to convey messages in a more efficient way and better organise scientific ideas. This is absolutely correct and will be addressed in the revised manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 6113, 2011.