

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

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My review is somewhat mixed. On the one hand this paper broadened my outlook on classification. On the other hand, the material presented and especially the analysis is somewhat superficial, and could have been more substantive.

To me this paper appears as a literature review, not overly critical or rigorous, written in a rather folksy style. (By the way I was misled by the title - I was expecting to see how catchment classification would impact hydrological modeling - this was completely missing). There is not even one figure, table, or schematic in the paper, confirming it is merely a literature review that a student might do before starting research.

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Much of the discussion talked about the history of classification in other fields, which is valuable indeed, however there is inadequate depth towards using these lessons to improve catchment classification.

By dividing into Linneaeian and statistical (clustering) approaches to classifications, I felt they are mixing up concepts/theory and methods. Clustering is one of many methods one could adopt to develop classification schemes. There could be a whole bunch of other methods one could adopt to define similarity and identify classes. In fact, the literature review is incomplete in this regard. The authors should look at the review paper by Bloschl and Sivapalan (1995) in Hydrological Processes where a whole section is devoted hydrologic similarity, including methods such as dimensional analysis, (model based) similarity analyses and also statistical methods. This review paper also provides a comprehensive literature review (nicely structured) for that time (now 15 years ago).

### Recommendation

I do not want to dismiss the paper out of hand, as there are very many good elements in it. However, I do not want papers appear in the literature that provide a rambling discourse as this one does - it does not do much good to the authors or the readers. I believe that the authors are capable of taking this paper to a higher level, into a very high impact paper that will be read by generations to follow.

I therefore challenge them to take the raw material they have (which is good), substantial restructure it, connect it to the literature (to previous attempts at classification based on hydrologic similarity), add a few figures and tables to provide a skeleton and improve readability and impact, and turn this paper into a masterpiece.

This requires major revision, which is not impossible to do. I look forward to the revised manuscript.