

Interactive comment on “Land classification based on hydrological landscape units” by S. Gharari et al.

G. Blöschl (Editor)

bloeschl@hydro.tuwien.ac.at

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All three reviewers are supportive of the paper although they do make suggestions for strengthening the paper.

Reviewer #1 (I. Nalbantis) provides a number of comments related to the presentation which the authors have fully addressed in their response.

Reviewer #2 (A. Nobre) notes that the DEM resolution analysis performed by the authors strengthens the land classification analysis as knowing what is the best DEM resolution to assess terrain-relevant classes is of crucial importance. Reviewer #2, however, takes exception to not considering the underlying deterministic nature of the

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phenomena that generate landscape classes with hydrological significance. While the authors address this in their response to some degree, there is probably room for a better justification of the fuzzy approach in the revised manuscript. The reviewer also has some misgivings related to authorship and credit of the HAND algorithm which are apparently due to some misunderstanding. While the authors do give credit to the HAND algorithm in their paper it may help to draw a clearer line between their own developments and what was done before to avoid any potential confusion. The paper might also benefit from a more specific title that better reflects the nature of the paper (current title is too broad), i.e., it is not about introducing a new approach to land classification, but an implementation of a new approach to classification of landscapes in terms of runoff generation mechanisms with some useful extensions. Reviewer #2 also points out some issues with nomenclature (such as wetland and drain) which the authors have clarified in their response.

Reviewer #3 (E. Zehe) requests some clarifications on the technical aspects of the classification as well as on some of the terminology which the authors address in their response. He also notes that some of the statements are too general and/or imprecise. The authors need to carefully revise these statements to make them as clear as possible. Reviewer #3 also suggests (similar to reviewer #1) that more detailed referencing to approaches of assessing functional units in the landscape is needed. I would recommend that the authors discuss their approach in the context of the literature in the introduction and methods sections and, more importantly, relate their findings in a more detailed way to the wider literature in the discussion section.

Final remarks: This is a timely and useful contribution to landscape classification from a hydrological perspective. The paper nicely links the index of height above the nearest drain to runoff mechanisms and therefore puts this index into perspective. Perhaps a stronger point can be made in the discussion and conclusions that height above the nearest drain is not a universal index and, depending on the runoff generation processes, other indices should be used. In submitting a revised version of the manuscript

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the authors are encouraged to address the review comments and in particular those summarise above.

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