Hydrology and Earth System Sciences Discussions

Interactive comment on "Modelling groundwater-dependent vegetation patterns using ensemble learning" *by* J. Peters et al.

Anonymous Referee #1

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In this paper, the authors investigated the applicability of the random forest model to explore the distribution of vegetation along an hydrological gradient. Groundwater, soil and management variables have been employed in the model. After an accurate analysis, the authors conclude that the model show to perform well vegetation patterns, although the accuracy is low for boundary areas.

General comments This topic is of great interest, in the last few years has been receiving considerable attention also by other similar journals. The vegetation patterns could even change profoundly under climate change scenarios, thus the applicability of these models could raise of importance. The manuscript is clear and well written, the English appropriate. The authors show a deep knowledge of the Modelling and variables data

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set are well incorporated in the model. I see no flaws in this study, thus I recommend to accept the paper. However, although the model provides interesting results, its application in hydro-climatological and hydro-ecological modeling remains still potential, due to its limited model capacity to capture gradients that include different vegetation types with different ecological performance typical of more complex ecosystems.

Specific comments Page 3690-3691. The paper shows some weakness in Methods. For example the vegetation description is poor, many information are missing and this is crucial as vegetation is the main subject in this paper: a) mean height, density, mean diameter, age, leaf are index etc. b) further, not always the reader has a deep botanical knowledge, latin names are not sufficient, so provide also the common names, at least of main species representing the seven vegetation types. c) are plants herbaceous, trees, bushes, shrubs? Define the different groups vegetating in the experimental site. Page 3690, lines 11-12. References are too many. Two are sufficient. Page 3690, lines 16-17. “Mapping was restricted to a selection of 56 species” Which criteria did you use for selection? (i.e. number of plants, percentage of species etc.). How many species did you have in all in your experimental site? Page 3691, line 11. Which kind of piezometer did you use? Figure 4. In legend of x axis: something is wrong with brackets direction.

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