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Hydrology and Earth System Sciences Discussions

Interactive comment on "Generation of soil moisture patterns at the catchment scale by EOF interpolation" *by* M. A. Perry and J. D. Niemann

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We would like to begin by thanking the reviewer for their suggestions. We found the review to be very constructive, and we believe we have implemented all of the suggestions. In this response, we specifically identify the changes made in response to each of the comments.

Reviewer 2

General comments

1. Suggestion to cite theoretical work on space-time variation of soil moisture.

We agree, and we now cite work on effects of soil moisture on real-time flood forecasting in the introduction of the revised manuscript.

2. Clarification on whether/how the results could be used with other datasets (interpreting/focusing field campaigns)

The approach of decomposing the data and interpolating the EOFs can be used anywhere. The applicability of a multiple linear regression against topographic attributes is likely to vary depending on the site. We have also added a few statements about potential applications in the conclusions of the revised manuscript.

3. Use for organization and design of field campaigns (reducing costs).

This is good idea, which we hope to implement in future work. We have also added a few sentences about this possibility in the conclusions of the revised manuscript. Also, our earlier paper on the subject (Perry and Niemann, 2007) has applicability toward efficient data collection by first sampling to establish the time-invariant patterns, and then sampling to estimate the spatial average soil moisture for the study area at future times.

Specific Comments

1. Clearer explanation about the role and evaluation of ECs.

We have clarified this description in the revised manuscript. Please see response to Reviewer 1 comment #3 above.

2. Deeper discussion about the differences of the method. Explanation for adoption of three later in the paper is sufficient.

We hope we have clarified this issue and provided more confidence in the methods and/or their limitations in the revised manuscript. Please see response to Reviewer 1 comment #4 above.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 2837, 2007.