Hydrology and Earth System Sciences

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Interactive comment on "Data assimilation in integrated hydrological modeling using ensemble Kalman filtering: evaluating the effect of ensemble size and localization on filter performance" *by* J. Rasmussen et al.

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After reading the manuscript I have few comments and remarks

1) Figure 4 shows the effect of different localization methods. It is not explained why we see the differences that we see. It is noted that 10 km is producing worse results but no satisfactory explanation is given. The lower graph (discharge) cannot be interpreted by the readers (I see only two colors);

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2) I wondered if the cross-process correlation issues etc that are being mentioned/discussed is also something that is seen/studied in other manuscripts already published on (integrated) hydrologic models (http://www.hydrol-earth-syst-sci.net/18/2343/2014/hess-18-2343-2014.html, http://onlinelibrary.wiley.com/doi/10.1002/wrcr.20169/abstract) or in discussion (http://www.hydrol-earth-syst-sci-discuss.net/12/3169/2015/hessd-12-3169-2015.html).

3) The manuscript makes a lot of assumptions, for instance about noise (SD, correlated/uncorrelated, etc) on forcing and parameters and it remains unclear what the effect of these choices is on the final outcome; I would appreciate a discussion on the effect of such choices on the final outcome;

4) Finally, the paper is a theoretical study. No observed discharge or head measurements are being used as far as I could see. Adding a comparison with measured data to the manuscript is needed and would overcome the issue regarding this manuscript mentioned by the authors in their last sentence of the conclusions.

minor Figure 5 subtitles not in right places

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 2267, 2015.

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