Hydrology and Earth System Sciences Discussions

Interactive comment on "A statistical post-processor for accounting of hydrologic uncertainty in short-range ensemble streamflow prediction" *by* D.-J. Seo et al.

Anonymous Referee #2

Received and published: 20 September 2006

Review Comments

This paper makes a significant contribution by presenting a new approach for post-processing short-range ensemble streamflow predictions to remove biases and account for prediction uncertainties. The authors' overview of the ensemble prediction process is valuable, as it provides a strong theoretical context for the post-processor, and defines its role within the larger forecasting processes. The approach itself is elegant in its simplicity, and statistically sound. It is also clear from the discussion that the authors have carefully considered many practical aspects of the implementation of such an approach; I appreciate that they carefully selected the results to present for

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clarity, but still provided insights on the broader investigation that was carried out. The paper is very well-written, and a pleasure to read. Well done.

Minor Comments

Page 1991, Line 11: Consider citing the HESS paper by Hashino et al. (2006), also part of the same *Special Issue on Hydrological Prediction Uncertainty*, which presents the same analysis as the cited reference, but would be more readily accessible to readers. Note too that their paper shows that the bias-correction methods improve skill by reducing the unconditional biases only.

Page 1998, Line 15: Please note that the equations show p rather than the desired ρ.

Page 2000, Line 21: I was a bit surprised that the weight α appeared in the first term, without a $(1 - \alpha)$ applied to the second term. From a mathematical point of view this has no consequence, but I wondered whether this was in fact the authors intent.

Page 2002, Line 29: Suggested wording: "divide the 47-yr record ... into two halves, ..."

Page 2004, Line 10: Although the RMSE levels off quickly, the percent reduction is still significant at most forecast locations out to 5 days. Isn't the post-processor adding significant skill out to 5 days in these cases?

For clarity, consider stating "the two" calibration periods in the text (Page 2004, Line 25) and in the captions to Fig. 4 and 5. The same comment is also relevant for Fig. 7 and 8.

Page 2007, Line 16: A climatology forecast in the histograms shown in Fig. 9-12 would appear as a mass point at the observed frequency of occurrence. Therefore, the characterization of a flat histogram as one that differs little from climatology was confusing to me.

Fig. 9: Please correct the ECDF for the observed flow in the insert.

HESSD

3, S972–S974, 2006

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A table showing b estimated with the procedure shown for the two calibration periods, as well other other key parameters used, would be helpful.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 1987, 2006.

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