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Hydrology and Earth System Sciences
Discussions

Interactive comment on "A Retrospective Streamflow Ensemble Forecast for an Extreme Hydrologic Event: a Case Study of Hurricane Irene and on the Hudson River basin" *by* F. Saleh et al.

Anonymous Referee #1

Received and published: 21 April 2016

GENERAL COMMENTS

This is very interesting work and a well-done study. I believe that this work constitutes a substantial contribution to scientific progress.

SPECIFIC COMMENTS

Comment 1: In the abstract the authors state that this modeling framework could be applied anywhere in the world. However, they use NARR dataset and a database from US based gage sites for calibration. How would these methods be applied for watersheds without gaging stations (or with only a few) outside of the US where the NARR dataset does not apply? Also, this statement was not discussed in the paper.

Comment 2: The HEC-HMS model uses the SCS Curve Number method that includes "antecedent moisture content" (P5 Line 22) as a parameter for estimating runoff. From my experience, model runoff estimation can be very sensitive to soil moisture. This indicates that calibrating the model will only produce accurate answers for the conditions of the storm it was calibrated to. How do you account for changing soil moisture in the forecast framework?

Comment 3: How long does it take for the streamflow forecasts to be produced? How much lead-time is left over? Is it enough to issue a warning?

TECHNICAL CORRECTIONS

P2 Line 18 – Extra period

P2 Line 31 – Change "using every ensemble" to "every member in the ensemble"

P3 Line 13 – "the ensemble spread was found . . ." – by who? Was that Komma et al. (2007)? I believe it would be better not to use passive voice in this instance.

P3 Lines 14-15 – Again with the passive voice – who devised it?

P5 Line 6 – change to "at hourly time steps"

P5 Lines 4-6 – Long sentence. Consider revising and dividing into two sentences.

P5 Line 22 – "soil cover, land use and antecedent moisture content" should be "soil type, antecedent soil moisture content, land use"

P6 Line 4 – should be "land use, soil type, and slope"

P6 Lines 6-7 – was it intentional to use "imperviousness" twice?

P10 Line 7 – Revise sentence – wording is unclear.

P10 Lines 8-10 – Check grammar and consider dividing sentence.

P10 Lines 11-13 – Consider rewording sentence and dividing.

P10 Line 16 – going into 3rd person – may want to avoid that

P10 Line 34 – Should “figures” be “figure”?

Figures 6&7 - They have too much information. Much of the information is lost due to its size and being squished into the other data. Consider simplifying or using alternate method to display information. Also, which member is the control? Cannot see it. Consider highlighting in some way.

P11 Line 3 – Change “showed a good” to “showed good”

P11 Lines 13-16 – Consider dividing sentence. Also, note extra space before period at end of sentence.

ADDITIONAL INFO

The authors may be interested in an upcoming publication on ensemble forecasting using ECMWF datasets listed here (http://rapid-hub.org/publications.html):

Snow, Alan D., Scott D. Christensen, Nathan R. Swain, James Nelson, Daniel P. Ames, Norman L. Jones, Deng Ding, Nawajish Noman, Cédric H. David, Florian Pappenberger (In Press), "A High-Resolution National-Scale Hydrologic Forecast System from a Global Ensemble Land Surface Model", Journal of the American Water Resources Association.

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