Nat. Hazards Earth Syst. Sci. Discuss., 1, C1126–C1128, 2013
www.nat-hazards-earth-syst-sci-discuss.net/1/C1126/2013/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "The challenge of forecasting high streamflows in medium sized catchments 1–3 months in advance" *by* J. C. Bennett et al.

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Received and published: 10 September 2013

General:

-Overall the authors address an important question related to streamflow predictability at monthly leads. A notable feature in their analysis is the simplicity of the input data, which has both advantages and disadvantages. The authors do a reasonable job highlighting these issues and therefore provide an informative and useful analysis. The writing style is clear and cogent and the results are generally adequately described. Therefore, it is my recommendation that the manuscript be published after minor revi-

sions.

Major:

-Given that floods are largely governed by dynamic meteorological inputs, namely precipitation, it should not be surprising that using static 'indicators' in the analysis adds little skill. The authors should consider using, or at minimum mentioning the role that seasonal precipitation forecasts could provide, via either numerical weather prediction models, or using an ensemble approach. Since the catchment wetness represents antecedent conditions, the authors could easily make use of precipitation observations (e.g. gauge measurements). This too, at minimum, deserves mention, since it has the potential (together with temperature) to characterize frozen precipitation storage (relevant to other analyses making use of this methodology).

-The general application of 'leave-one-out' analysis, i.e. jack-knifing, is sound. However, the inclusion of information from years that occur later than the year being forecast (i.e. future information), would necessarily not be available to any true implementation of this method. This caveat is worth mentioning in the manuscript.

-A clearer explanation of the utility of the different skill scores is warranted, i.e. justification of these metrics in terms of the diagnostic information they provide (Equation 4 and 5).

-Given the relative hydroclimatological and geographical similarity among basins, a comment is warranted on the applicability of this approach to other regions and climates.

Minor: -The distinctions of 'high' flows, 'small-medium' sized catchments. Perhaps more succinct language could be used, e.g. monthly flood forecasting, etc. . .

-L24 Pg 3130: "flood stage" should be used instead of "flood heights'.

-L17 Pg 3132: The following references are most relevant for the impact of soil wetness on forecast skill:

Mahanama, S.P., B. Livneh, R.D. Koster, D.P. Lettenmaier, and R.H. Reichle, 2012: Soil Moisture, Snow, and Seasonal Streamflow Forecasts in the United States, Journal of Hydrometeorology, 13, 189-203, 10.1175/JHM-D-11-046.1.

Koster, R.D., S.P. Mahanama, B. Livneh, D.P. Lettenmaier, and R.H. Reichle, 2010: Skill in Streamflow Forecasts Derived from Large-Scale Estimates of Soil Moisture and Snow, Nature Geoscience doi.10.1038/ngeo944.

-Clarification is needed as to whether Max 5D represents an accumulated volume, versus a mean flow rate.

-For ease of interpretation, a column of 'runoff ratio' should be added to Table 1.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 3129, 2013.