Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2017-389-RC3, 2017

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Long-term ensemble forecast of snowmelt inflow into the Cheboksary reservoir under the differently constructed weather scenarios" *by* Alexander Gelfan et al.

Anonymous Referee #3

Received and published: 20 August 2017

This paper presents a case study on developing the long-term ensemble forecast of water inflow into the Cherkasy reservoir using ECOMAG model with two forecasting schemes: ESP and weather generator. Four inflow characteristics related to inflow volume, maximum value, and timing were evaluated using a set of probabilistic and deterministic metrics. The modeling and analysis was carried out within the framework of the Phata Rhei Research Initiative of the International Association of Hydrologic Sciences. However, my major concern is that this paper does not provide any insight or broader implications to hydrologic forecasting beyond the Cheboksary reservoir. My comments are given as follows:

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Discussion paper

1. In the introduction section, the authors need to re-formulate their research objective based on the current state of literature. The current objective “present the performance assessment of a long-term ensemble forecasting system of water inflow into the Chebokary reservoir of the VKRC ” seems too restrictive to a specific area.

2. This study compared ESP and weather generator forecasting schemes. These two methods are classic approaches for inflow forecasts and have been tested in many regions. The ESP approach is based on the ensemble of historical observed weather data. The weather generator approach generates synthetic weather data based on stochastic models. These two approaches also generated a different number of ensemble members: 50 versus 1000. This is like comparing apple and orange. The discussion and description of these two methods are too shallow. The authors need to clarify the motivations and implications of comparing these two forecasting schemes, with in-depth analysis and comments on these two methods.

3. When evaluating probabilistic forecast, the authors used Brier skill score to compare the two forecast schemes with climatology of the inflow. The weather forecast forcing constructed using ESP is actually climatology of the weather variables. To compare these two forecasting schemes, I think it would be helpful to use ESP as a reference forecast relative to the WG-based forecast.

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