Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/hess-2021-13-RC1, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on hess-2021-13

Anonymous Referee #1

Referee comment on "The benefits of pre- and postprocessing streamflow forecasts for an operational flood-forecasting system of 119 Norwegian catchments" by Trine J. Hegdahl et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-13-RC1, 2021

The manuscript by Hegdahl et al. attempted to apply a set of pre and post-processors with a HBV model on 119 catchments in Norway to find out general features of improving streamflow forecasts. Introduction is highly motivating and it covers a set of very important questions to be answered in this area of research. In fact that actually made me read this very long manuscript. However, from Section 2.3 onwards, I started noticing that there is one line of thinking that Authors are trying to pursue in this manuscript, which may be the serious limitation of the scope of their work. For instance, why should one use only HBV model, why to use ECMWF ENS data only, how can one interpolates 25 km spatial resolution forecasts to 1 km observation data without any downscaling technique, how Authors estimate the aggregated average values for each catchment, why not one use log-sinh instead of Box-Cox transformation, how justified it is to use Ensemble Coupla-Coupling, why not use Schaake Shuffle, aren't there other pre- and post- processors than CAL and BMA, etc. etc. There are many such questions which are not addressed here. In other words, I couldn't find what is novel here, knowing very well that there are several papers on this topic already published. Practically, every month we find new publication on pre- or post-processing in different journals.

When I started reading the results section, very long writeup in sections 5 and 6, I wondered why Authors needed to look at 119 catchments. Why not pick few catchments and present definite answers to the two questions which Authors have summarized in the conclusion. Since the study tried to capture so many different aspects, physiography, seasonal, snow-melt vs. rainfall based flood, etc. etc. that lead to Authors having fairly standard conclusions. Instead, I would look into few aspects but with rigorous analysis and try to derive some conclusions which can actually benefit the hydro-meteorological forecast community, not only in Norway but other places also.

It is very important to have plots which can be interpreted easily. In this manuscript, almost all the results are shown through box-plots. A set of time series plots showing how good the pre- and post-processors are improving the forecast would be highly beneficial.

Similarly to show the improved flood forecasting, a time series plot would make things very clear. But I can only imagine the difficulty one would face in summarizing the results of 119 catchments, 51 ensembles, 9 lead time etc.. Therefore, a small number of catchments from different parts of the country may be the way forward. In one sense, Authors are already doing this by summarizing results of only 6 catchments. Then please limit the work to only pre-processors, that could be one option. In summary, Authors have to find a way to focus on novelty of this study rather than trying to cover all possible aspects on this topic.