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Comment on hess-2020-642

Anonymous Referee #1

Referee comment on "Ensemble streamflow data assimilation using WRF-Hydro and DART: novel localization and inflation techniques applied to Hurricane Florence flooding" by Mohamad El Gharamti et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-642-RC1>, 2021

Overall this manuscript shows the WRF-Hydro framework is coupled to the Data Assimilation Research Testbed to improve ensemble streamflow forecasts under extreme rainfall conditions during Hurricane. I think this work is essential. However, I have some queries related to the methodological details of this paper and some minor corrections.

Please provide a summary table for the input dataset used in this study and its specifications.

There are so many acronyms used in this paper; please try to avoid this.

Why author choose the Muskingum-Cunge Streamflow model to route the flows? For example, this method has limitations in backwater effects, flood plains storage and interaction of channel slope in hydrograph. Several dams and reservoirs are present in this region, and therefore, the backwater effect might affect the flow routing.

If there is the streamflow's baseflow underestimation, how the NWM model solved this issue? Please clearly explain in the methodology section.

How is the ensemble of 80 members selected in this work? The author has written that this number is achieved based on the computational demand and statistical performance. I would expect at least a figure to justify this optimization.

Why are multipliers sampled using a uniform distribution? If another distribution is used instead of the uniform distribution, how it will affect the final results?