



Comment on hess-2021-176

Anonymous Referee #1

Referee comment on "Deep, Wide, or Shallow? Artificial Neural Network Topologies for Predicting Intermittent Flows" by Farhang Forghanparast et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-176-RC1>, 2021

The manuscript suggests the combination of classification and regression models (deep and wide topology) to increase the accuracy of the current data-driven models available for streamflow forecasting in intermittent rivers. Overall, the topic is very interesting, and the manuscript was written well. The suggested models are new, and the results are well discussed. My comments are listed below:

- line 98: update the references of the current regression-based models regarding the following paper:
- Mehr, A. D., & Gandomi, A. H. (2021). MSGP-LASSO: An improved multi-stage genetic programming model for streamflow prediction. *Information Sciences*, 561, 181-195.
- line 118-119: In the hydrological modeling community ANNs are known as regressors; however, the authors claimed ANNs as high-performance classifiers. The given references in line 119 are out of the hydrological forecasting community. It is better to remove lines 118-119. Furthermore, please justify why you don't select a well-known classifier such as SVM or random forest?
- Section 3 is a part of the methodology of this paper. It could be combined with section 2. The authors must avoid providing literature review in this section and section 4 as well. For example, lines 203-209 must be removed, or lines 216-236 must be substantially shortened. Regarding the organization of the manuscript, I prefer to see Figure A1, Table A1, and Table A2 within the main text. The manuscript does not need an appendix.
- Line 149: remove the full expression of ANNs as you already provided in line 118.
- Line 181-187: redundancy in the citation is seen in this paragraph. Remove some of them.
- Remove capitalization of each word in section 4.4.
- Flow rate or flowrate? Use a fixed one in the whole text.
- In section 5, lines 341-342 are irrelevant. Please remove.
- At the end of Section 5, list the selected inputs clearly. Statistical features of inputs must be given.
- Section 7.1. Calibration must be replaced with training.