**Title:** A novel technique to improve the hydrological estimates at ungauged basins by swapping workspaces
**Authors:** M. U. Qamar, M. Azmat, M. Usman, D. Ganora, M. A. Shahid, F. Baig, S. Mushtaq

## OVERALL EVALUATION

The manuscript focuses on regional streamflow regimes predictions in ungauged sites by using a dissimilarity-based method. Looking in a comprehensive way at the whole study, I regretfully have to inform the Authors that, in my opinion, the manuscript is unsuitable for publication in Hydrology and Earth System Science. My main concerns about the manuscript are listed below. I hope the Authors will find them useful should they decide in the near future to critically revise their study.

*General comment:*
Given the topic and the analyses reported, I think it is misleading to classify this manuscript as "technical note". Although the Authors do not introduce any novel method, they apply hydrological tools and models through a somewhat novel procedure, which I suppose it can ascribed to a scientific paper, rather than a technical note. I see the technical note more like a document that reports further tests on a well-known procedure or method, with the final aim to be readily available for operational purposes. Instead, I think that the procedure presented might have a potential for predicting streamflow regimes in ungauged sites, as it relies on previous studies on dissimilarity-based techniques, published by one of the co-authors (Ganora et al., 2009). Nevertheless, this potential must be further investigated. For this reason, I think it is worth the effort to work on a better in-depth comparative study, with detailed results and comparisons with other models.

*Methodological comments*:
- Even though I have understood the idea behind the whole study, I really struggled with how the swapping applies in ungauged sites. In addition, the Authors use leave-one-out cross-validation strategy (see L 170-171 P5), however they never emphasize this. In my view, given the operational purposes of the study, this should be reported better, e.g. added in the abstract and clearly stated within the body of the text.
- I am not sure about the normalization applied to either the descriptors or the discharges (i.e. hydrological variables). Variables must be comparable from one site to another. This assumption is fundamental in regional analyses, in fact, in many cases reported in the literature (among all, refer to see Blöschl et al., 2013) some sort of standardization is always employed to the streamflows, e.g. using the mean annual flow (or monthly in this case) as reference values. I might be wrong, but I do not see this step in the manuscript except for a general statement at L89-90 P3, however other normalizations seem to be used the dissimilarity indices (see L140 P4), but none for the descriptors, correct?
- I have found the mathematical notation really poor and misleading throughout the text, with some relevant inconsistencies (see e.g. how the subscripts in eq. 4 do not match with the definition in section 2).

*Other comments*:
- The manuscript is not well structured and the writing is confusing, with many errors that sometimes make very difficult the understanding of the analysis.
- Please, use English for reporting variable name (descriptors' names, see table 1). This is a minimum requirement for any manuscript, whether it is a technical note or a scientific paper.
- Since the Authors are using leave-on-out cross-validation it is possible to draw scatterplot of empirical vs. predicted dissimilarity-indices, I strongly recommend using graphical tools rather than long tables (which do not really help understanding the results), or, alternatively, please prefer summary tables in the body of text with supplementary material for the complete reporting of the results.

**REFERENCES**

[1] Blöschl, G., Sivapalan, M., Thorsten, W., Viglione, A., Savenije, H., 2013. Runoff prediction in ungauged basins: synthesis across processes, places and scales. Cambridge University Press.
[2] Ganora, D., Claps, P., Laio, F., Viglione, A., 2009. An approach to estimate nonparametric flow duration curves in ungauged  basins. Water Resour. Res. 45. https://doi.org/10.1029/2008WR007472.