

## ***Interactive comment on “Development of reliable future climatic projections to assess hydro-meteorological implications in the Western Lake Erie Basin” by Sushant Mehan et al.***

**Sushant Mehan et al.**

mgitau@purdue.edu

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Comment 1a: The reading of the manuscript is quite straight forward. It is for sure a meaningful piece of information and surely a nice initiative by the authors to make their data public. It is not usual to have data papers in HESS, but there are now and then quite interesting examples such as the CAMELS data set by Addor et al. (2017). While it is quite obvious to me how incremental and novel Addor et al. (2017) is, I struggle in finding the same level of novelty in this manuscript. Several countries develop their set of bias corrected climate forcing for applications in hydrology and other sciences including validations with respect to ground truth. In Switzerland the current data set

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(<http://www.ch2011.ch/en/index.html>) will be soon updated with a new generation of scenarios (<http://www.ch2018.ch/en/home-2/>).

Response: The manuscript presents the problems in projected meteorological data based on simulated historic climate values. The methodology and framework were developed using three stations but the future climate projections were made for all eight stations shown in Figure 1 of the manuscript. Using the methodology and comparative outcomes based on this study, we build daily data for all the stations in WLEB, which included 16 ground-based climate stations. In evaluating GCM data from two different databases we found some critical issues and, in particular, that precipitation extremes (which are the ones that present the greatest challenges with respect to management and adaptation) were largely misrepresented. Thus, in addition to quantifying the errors, we also corrected for bias. The corrected data are available as values (rather than changes) at a daily time step and can be used reliably in a variety of applications, and in particular with hydrologic and water quality modeling studies for which daily data are needed. These data are currently published with embargo pending publication of this manuscript and will be available to the public through the Purdue University Research Repository (PURR) in due course.

Comment 1b: At the beginning of the annotated manuscript I attached, I warmly suggest to consider moving this manuscript to another Copernicus Journal. "Earth System Science Data" (<https://www.earth-system-science-data.net/>) is to me the right platform to present this piece of work. According to the list of "manuscript types" for HESS ([https://www.hydrology-and-earth-system-sciences.net/about/manuscript\\_types.html](https://www.hydrology-and-earth-system-sciences.net/about/manuscript_types.html)), there is the option to have a "cutting-edge case study" accompanying the data. This is not the case for the present manuscript and thus I suggest contemplating this option in a next phase of the review process.

Response: We would like to thank the reviewer for this suggestion. This is a good suggestion. However, we'd be concerned about being able to reach our target audience who would be more aligned with HESS. The objectives of our manuscript are aligned

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with the Hydrometeorology subject area (stochastic processes, modelling approaches, and uncertainty analysis sub-areas) of HESS hence our choice of the journal. We are willing to consider ESSD if the editor(s) feel that that would be a better fit.

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