

Interactive comment on “Evaluation of the ERA5 reanalysis as a potential reference dataset for hydrological modeling over North-America” by Mostafa Tarek et al.

Anonymous Referee #2

Received and published: 24 February 2020

The manuscript evaluates the ERA5 reanalysis as a potential reference dataset for hydrological modelling using two lumped hydrological models in North American catchments. They show, ERA-5 based hydrological modelling performs better and it is equivalent to the observations. Overall, the manuscript is written well and it is well within the scope of HESS. Therefore, I recommend the manuscript for publication, however, with some minor modifications.

I notice some bias pattern between west (cold) and east (warm). Perhaps this may be due to inability of ERA-5 in capturing recent increase in the frequency with which high amplitude ridge trough wave patterns result in simultaneous severe temperature

C1

conditions in both the West and East (singh et al., 2016; Raymond et al., 2017), or with some other reason. It would be good, if the author provides some explanation to this pattern in their revised manuscript.

This study would form a good foundation for those regions where it lacks the observational gauge datasets (such in underdeveloped countries). The authors should add a discussion on this.

References

Raymond, C., Singh, D., & Horton, R. M. (2017). Spatiotemporal patterns and synoptics of extreme wet bulb temperature in the contiguous United States. *Journal of Geophysical Research: Atmospheres*, 122(24), 13-108.

Singh, D., Swain, D. L., Mankin, J. S., Horton, D. E., Thomas, L. N., Rajaratnam, B., & Diffenbaugh, N. S. (2016). Recent amplification of the North American winter temperature dipole. *Journal of Geophysical Research: Atmospheres*, 121(17), 9911-9928.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-316>, 2019.

C2