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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Can river temperature models be transferred between catchments?" *by* Faye L. Jackson et al.

Anonymous Referee #3

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General comments :

This paper presents empirical basin-specific water temperature models and tests for their transferability to other basins. The authors provide a discussion about the water temperature response to individual landscape variables and to air temperature, and about the importance of the other basin specifics that cannot be explained by the extracted landscape variables. These are questions of present interest to the community.

The chosen case study/ data set are interesting, as they provide a large enough water temperature range in each basin, and one basin that shows significantly different from the others. However, the number of sites in each basin is limited vs number of covariates considered and effectively used in the models.

The text is concise and precise, with appropriate level of detail. Tables and Figures are

useful.

Specific comments :

One may guess that the Bladnoch basin shows significant physiographical differences, in addition to geographical location, as compared to the other 3 basins, but it would be interesting to see it on comparative graphs – maybe just box plots comparing the landscape variates for each basins, as in Figure 2 for the water temp?

Intercorrelation issues are mentioned, but should be further discussed. In particular: could it explain the unphysical relationship between water and air temperatures in the Bladnoch basin?

P. 2, l. 24: I agree with the choice of focusing on only one temperature metric in this paper, but the statement "The principles explored in this paper are likely to be similar across water temperature metrics" seems a bit forward. Variability metrics and others such as number of degree-days could show less transferable than average and extreme values.

P. 4, l. 13: "A 'full' model was first fitted which included all the available covariates": all available covariates, or only those that were not rejected due to strong (>0.8) intercorrelation?

Technical corrections : Just a suggestion: rename the predicted variable throughout the paper, to reflect the way it is computed and the fact that it is not the maximum August temperature (e.g. Twmax –> Tw7d max).

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