

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

### **Anonymous Referee #1**

Received and published: 6 March 2017

The manuscript describes a study in which two types of statistical models are tested for intra and inter-basin transferability. One model uses only landscape variables as predictors, while the second model includes air temperature. In all cases, the statistical model used was the GAM. The authors show that inter-basin transferability is difficult with a model that includes air temperature as a predictor.

Overall, the paper is technically sound. A short review of the literature on the use of GAM in water temperature modeling would be a welcome addition. In my opinion, the main weakness of the manuscript is in the discussion. Two main points need to be further discussed:

1. The challenge of inter basin transferability using air temperature needs to be further addressed and potential next steps identified. For instance, the readers may ask

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the following question: Is it the seasonal component or the residual component of air temperature that make it so difficult to transfer? Could an alternative model be envisaged in which the parameters of the air temperature seasonal harmonic be estimated/transferred?

2. The problem of the impossible air-water temperature relationship at Bladnoch needs to be further explained. This is very unusual. I suspect that it is caused in part by station locations on this basin and by the fact that the samples used in the model only include air temperatures ranging between 18.5 and 20.5 deg C (figure 4)?

A number of other comments can be found in the pdf file attached.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2017-43/hess-2017-43-RC1-supplement.pdf>

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-43, 2017.

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