

## ***Interactive comment on “A distributed stream temperature model using high resolution temperature observations” by M. C. Westhoff et al.***

**M. C. Westhoff et al.**

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We would like to thank J. Fleckenstein for his comment on our paper. We consider the comment as very useful. Below we provide the answers to the comments and questions raised.

The referee suggests a more detailed review of the existing literature. We thank you for the valuable suggestion and we shall discuss them in the final version of the paper.

The referee is missing a discussion on the limitations and assumptions made in the model. We will do this in the final version. Especially the assumptions will be discussed, which may imply that our model has limited validity in other streams.

A sensitivity analysis is also suggested by the other referees and will be included in the final version.

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Reply to comments:

P128 L6-7: 3 out of 4 sources had already been identified before the temperature survey by visual inspection and conductivity measurements. One source (source 3) was found by the method presented. We agree that this source should formally be mentioned in the results section, but because the other three sources are mentioned on P128, we have the opinion that it improves the readability of the paper to mention the fourth source there as well. In the final version we will make clear that one source was not yet known before the temperature survey.

P128 L14-15: Q3 has been measured at 10 minutes interval using a Keller pressure sensor. The hand measurements at Q4 were done by measuring the height of the water level above the bottom of the V, and by holding a bucket under the V and measuring the filling time of the bucket.

P128 L22-24: We agree that 7km is quite far away for meteorological measurements. But because the temperature survey was a try-out we did not exactly know what we could expect from the measurements. Only after we saw the wonderful dataset obtained it appeared useful for this study. This is the reason why we didn't measure these parameters in the field. We presently installed a mini-meteo station in the catchment.

P129 L8: We meant to discuss the dispersion as a missing process in the water channel. However, because we use a simplified stream model (a series of well mixed reservoirs) these processes are of minor importance and therefore excluded. A next step would be indeed to model the convection with a more sophisticated stream model, where dispersion can be included.

P129 L10-17: (Probably P130?) We take this in consideration for the final version.

P133 L5-6: We will discuss this in the section of limitation we will add (see above).

P137 L12-13: We take this suggestion into account in the final version.

P137 L17: We take this suggestion into account in the final version.

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P137 L19-23: This comment will also be discussed in the section of limitation we will add (see above).

P140 L1-4: We fully agree on that. Therefore we suggest that further research has to be done on this (P140 L4).

P140 L4-5: Because we showed the impact of lateral inflows, it is important to quantify them correctly. Since we can only calculate the relative discharge of the inflows, it is important to know the discharge upstream or downstream of the source. This discharge can be better estimated if losses are quantified correctly. We will make this clearer in the final version.

P140 L14-15: We shall take this suggestion into account in the final version.

We consider the technical comments as useful and they will be taken into account in the final version.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 125, 2007.

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