

# ***Interactive comment on “The challenges of an in situ validation of a non-equilibrium model of soil heat and moisture dynamics during fires” by William J. Massman***

## **Anonymous Referee #2**

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In my original comments on this manuscript, I mentioned that the sentence on lines 452-453 required clarification. I also mentioned the following: To understand the context of this statement, it would be useful to know how much vertical structure in  $\lambda_{\text{sub-s}}$  is included in the model.

In response to this comment, the author has proposed a sentence to be inserted immediately following the one on lines 452-453. That sentence is:

“This could easily be the case for MEF soils because the present model of  $\lambda_{\text{sub-s}}$  does not include any of the observed vertical structure in soil bulk density or its relationship to the vertical structure of the soil’s thermal conductivity (Massman et al.,

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2008)."

With this clarification, I now know why I did not understand the context of the statement on lines 452-453. Nowhere in the original manuscript does the author explicitly state that bulk density was assumed to be constant with depth. This needs to be clearly communicated in the description of the model. The sentence above should be retained, as it does indeed provide clarification, but this alone is insufficient. It needs to be made clear earlier in the manuscript (i.e., in the description of the model) that bulk density was taken to be constant with depth.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-193>, 2020.

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