

## ***Interactive comment on “LAKE 2.0: a model for temperature, methane, carbon dioxide and oxygen dynamics in lakes” by Victor Stepanenko et al.***

### **Anonymous Referee #2**

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This paper presents excellent description of the latest version of 1D lake model “LAKE”. The model solves horizontally averaged equations for the heat, gases and momentum transport within water body. General description for main processes represented in the model is provided. The model is validated against data gathered at lake Kuivajärvi (Southern Finland). Basic results are well illustrated. The model satisfactorily reproduces observed patterns of seasonal variations of temperature and gases in lake Kuivajärvi with calibration of only two constants relevant to CH<sub>4</sub> production and consumption. The authors emphasize the role of the internal oscillations and the thermocline turbulence in vertical transfer of dissolved.

The paper is well written and well structured. I recommend the paper for publication in its present form.

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Discussion paper



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