

Interactive comment on “Modeling the impediment of methane ebullition bubbles by seasonal lake ice” by S. Greene et al.

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To my knowledge, this is the first study in which the processes related to methane impediment by a lake ice are considered in a modelling framework in such a detail. The authors thoroughly analyze different mechanisms of methane transport through the ice cover and bubble trapping in it. The type of model suggested in the paper may be referred to as a semi-empirical, as it is largely informed by measurements taken at a particular lake site, although involving process-based formulations on the ice depth evolution and methanotrophy. Generally, this study may be regarded as a valuable step in our understanding of methane balance in frozen lakes. However, there are some "strong" simplifications in the model formulation that need more accurate evaluation. This would significantly strengthen the results of the study.

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All specific comments are in attached file.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/11/C4260/2014/bgd-11-C4260-2014-supplement.pdf>

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