

## ***Interactive comment on “Large-scale regionalization of water table depth in peatlands optimized for greenhouse gas emission upscaling” by M. Bechtold et al.***

**Anonymous Referee #2**

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**General Comments** This manuscript contains some interesting new approaches to generate exhaustive spatial predictions in a data-scarce environment. The structure of the manuscript could be improved by starting with the methodology followed by the data and data requirements.

**Specific comments** The structure of the manuscript would benefit from starting chapter 2 with paragraph 2.3 first describing the general methodology followed by the data used. The current structure requires referring to paragraphs later on in the manuscript. On page 7 line 19 you state that boosted regression trees allow for data gaps, but I can't find an explanation on how predictions are made when predictors are missing.

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The weighting scheme discussed in paragraph 2.3.3. is presented as common practice yet there are no references in the entire paragraph. The mathematical formulation for  $W_i$  gives three different formulas (5,6,7) all using the same symbols, this indicates that there are in fact three different  $W_i$ -types, please make this clear from the mathematical notation or give only the formula used. Formulas 8 and 9 require a reference or some mathematical backup. Add a formula number for the BIAS. Notation in formulas (3, 4, 4b) is not concise:  $i$  is used both as subscript and superscript, it should be subscript. Simulated or estimated values are commonly indicated with the hat-symbol, individual observed values can be denoted with the subscript  $i$ . In paragraph 2.3.2 the weights  $W_i$  are used, but the paragraph on weighting comes later on, start with paragraph 2.3.3. The reference (Gaast., 2009) is missing in the literature section

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