Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2019-367-RC2, 2020

Geoscientific Model Development Discussions
Open Access
EGU

Interactive comment on "Evaluation of $CH4MOD_{wetland}$ and TEM models used to estimate global CH_4 emissions from natural wetlands" *by* Tingting Li et al.

Anonymous Referee #2

Received and published: 3 April 2020

The paper deals with a topic which is of great importance to climate change studies, and requires attention by terms of model development despite of multi-year efforts. Novel studies comparing performance of models in representing wetland methane emissions are highly welcomed. Especially efforts toward evaluating the models at swamps, marshes and coastal wetlands and selecting sites equally from all important emission regions of the world is a benefit. It is also a weakness of the paper, as the number of sites is not large when comparing to existing literature (e.g. Turetsky et al., GCB2014, Treat et al., GBC2018), and when the sites are divided into different categories, the number per category becomes even smaller. Also analysis of the seasonality of the fluxes is missing, and would be best studied by using eddy covariance

Printer-friendly version

Discussion paper

flux measurements, as noted by the authors. However, the paper brings a welcomed contribution to the field and can be accepted after making the text more consistent and explaining more details. Detailed comments: *The manuscript needs a language check *The global emissions are in the lower end of the range given in literature (see e.g. Saunois et al., ESSD 2019, and other references in introduction of this manuscript). What could be the reasons behind this? l44-46: You should here shortly clarify what the 'more accurate model' means l130: What does soil Eh mean? l214-215: What does seasonal flux mean in this context? Is it the season of annual maximum emissions? How long does it last for the different sites? l402: Here, annual fluxes are mentioned, but in the Fig 2 (and Fig 3 and Fig 4) caption you mention seasonal fluxes. Which is correct? Furthermore, which methods did you apply for gap-filling to obtain annual totals? Supplementary *Not much is told about calibration data. You tell only in 4.2 that you used chamber measurements. It would be useful to add information here, or in Table 1, introducing the measurement method. How did you process the data and how many data points did you use in the calibration? * What does VI (vegetation index) mean in this context? Does have a seasonal cycle? From where is it obtained? Did you calibrate it? *Table S2: Where did you get tundra and peatland values? Which sites were used in calibration?

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2019-367, 2020.

Printer-friendly version

Discussion paper