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Discussions

Interactive comment on "Effects of soil temperature and moisture on methane uptakes and nitrous oxide emissions across three different ecosystem types" *by* G. J. Luo et al.

Anonymous Referee #2

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Across-ecosystem comparison of N2O and CH4 emissions is rare and this manuscript might contribute to new insights of system-level generalization of environmental controls on those two trace gases. However, there are several issues the authors need to address. 1.Uptake vs. emission. The authors use gaseous uptake and gaseous emission interchangeably, which causes confusion to readers. The uptake process represents sink for trace gas, such as CH4, through bacteria in soils that consume CH4 as an energy and carbon source. As a result, the gaseous flux is negative, in other word, from atmosphere to soil. On the other hand, emission usually stands for positive flux from soil to atmosphere. Here are several places of wrong use of uptake and emission. Subtitle of 4.1: " Controls of N2O uptake", By no means can N2O flux be

translated to N2O uptake. They are completely irrelevant processes. I would image by saying "CH4 uptake" the authors indicate all CH4 flux are negative. However, they are all positive in figure 1∼3. If it is the case, the authors should replace CH4 uptake by CH4 emission. 2.Time scales of the data are not clear. Are the variables presented in figure 1∼3 hourly or daily data? How did the authors aggregate the data into daily time scale from something (e.g. soil water content) at 1 min interval? Please describe your methods. The relationships between gaseous fluxes and environmental controls in this paper only hold true for a certain time interval (daily?), yet it's well known this control is time-scale dependent, in other word, the relationships won't work at weekly, monthly, or annual time scale. The authors need to address this limitation in Discussion. Specific comments: 1.Line 14∼17. The authors used a model-generated temperature and moisture data for the tropic forest site. Please address the uncertainty of this simulated data set. 2.Table 4. First row of Soil temperature (T). A variable M in lieu of the variable T, appeared in the equation. 3.Table 5. First row of soil temperature. A variable M in lieu of the variable T, appeared in the equation.

Interactive comment on Biogeosciences Discuss., 10, 927, 2013.