

Interactive comment on “Combining two complementary micrometeorological methods to measure CH₄ and N₂O fluxes over pasture” by J. Laubach et al.

Anonymous Referee #2

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General Comments: In this manuscript, authors tried to quantify CH₄ and N₂O flux over pasture in New Zealand using two different but complementary micrometeorological methods. One is using the information of CO₂ flux measured by the eddy-covariance technique and the gradients of CO₂, CH₄ and N₂O measured with a FTIR spectrometer assuming a same value of turbulent diffusivity for all 3 gases in the surface layer (GGR, gas-gradient ratio method). The other one is to use the information of elevated CO₂, CH₄ and N₂O under stable nocturnal boundary layer and gap-filled eddy covariance CO₂ flux (NSR, nocturnal storage ratio method). The two methods used to estimate the flux in the study are theoretically defensible, and all their assumptions are reasonably valid. As authors pointed out at the end of the paper that their

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estimated CH₄ and N₂O flux are well within those values reported in the literature, all their conclusions are drawn properly based on the experimental data. In addition, authors did a nice job to analyze the advantages and down sides of GGR and NSR methods. The manuscript is very well written. Therefore, I would recommend accepting the manuscript as is. Authors already addressed all my specific comments from initial review.

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