

Dear Editor:

Thank you for the detailed comments on the final version of our manuscript. You suggested edits have been made and included in the final version of the paper.

Sincerely,

Brian Washburn

Eduardo Santos

Public justification (visible to the public if the article is accepted and published):

Thank you for revising the manuscript after consideration of reviewer comments. These revisions have largely satisfied the reviewers' concerns and further major revision is not required. However on now reading the revised MS end to end, I would like to recommend some reorganisation of existing paragraphs for improved readability. I find the current breakup into (unnumbered) sections to be a little illogical – general methods are mixed up with the specifics of the field experiment, and Windtrax must be explained twice (once for simulations and once for flux estimations).

The reorganization has been completed as suggested in the final version. We have added better numbering to the sections to help improve readability.

I have made some explicit suggestions in the additional private note section

Additional private note (visible to authors and reviewers only):

In principle the general experimental and method details including DCS should all appear together in a Methods section (lines 64 – 108, 140-150, 210-220) followed by Windtrax and the IDM simulations (currently "Sensitivity and precision required for grazing measurements, L109-140 and "Computing CH4 flux...", line 223 - 244), then the specifics of the field measurements and results ("Controlled release experiment lines 152 – 300 after moving 210-220 and 223-244), and then summary and conclusions.

Thank you for the suggestions, this will make the paper clearer. All information has been added in the 'Methods' section as suggested. See the marked up version of the manuscript for specific changes.

After rearranging sections/paragraphs, please check for logical consistency and flow, so the general methods precede their specific application.

I also recommend sections and subsections, preferably numbered, it is then much easier for cross referencing. Suggestion for logical flow:

1. Introduction and motivation
2. Methods
 - a. DCS
 - b. Obtaining CH₄ mole fractions using spectral line fitting
 - c. IDM, Windtrax
 - i. Simulations of sensitivity and precision
 - ii. Computing CH₄ flux using an inverse dispersion model
3. Controlled CH₄ release experiment
 - a. Description
 - b. Results
4. Future work and conclusions

The paper structure has been rearranged as suggested.

Minor technical corrections:

L185 Campbell is mis-spelt

L241 sigma-squared-rd appears twice, one should be ru

These minor corrections have been made.