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Atmospheric Measurement Techniques Discussions

Interactive comment on "Evaluation of a lower-powered analyser and sampling system for eddy-covariance measurements of nitrous oxide fluxes" *by* Shannon E. Brown et al.

Anonymous Referee #1

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General Comments

This manuscript presents an extensive study of the performance of a modified version of a tunable diode laser system for measuring N2O fluxes using eddy covariance. The paper is very well written with an excellent description of the Methods and Results. It is easy to follow and will be of general interest to the flux measurement community. The Discussion is appropriate, covers the relevant literature, and reflects the current state of knowledge of our science.

This paper should be published. My specific comments below are quite minor and can be easily accommodated by the authors.

Specific Comments

Lines 9 and 17. Avoid acronyms in the abstract such as EC and TDLAS.

Line 31. High r-square values do not tell us about the fluxes being similar; i.e. the slope or means could be quite different. Can you give an additional statistic to tell us how close the comparison was (e.g., regression slope or % difference between the mean values)?

Line 46. The word "significant" is not quite right here; perhaps you mean a sufficient spatial sample?

Line 48. So if we remove the acronyms in the Abstract, define "EC" here.

Line 90. Some references here, such as Wagner-Riddle 2017 reported on flux-gradient measurements, yet this discussion is about EC.

Line 306. Velocity instead of speed for "w".

Line 374. Perhaps "freezing" instead of "zero" so that the temperature units don't matter?

Line 459. Were the coefficients the same for the TE and LN comparisons, or is this a typo? If they were identical, perhaps reword.

Line 474. This paragraph is about EC measurements of N2O but the 2 references are more about CO2. Are they appropriate?

Figure 4. Units should be given for frequency on x-axis.

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