

Interactive comment on “The high frequency response correction of eddy covariance fluxes. Part 1: an experimental approach for analysing noisy measurements of small fluxes” by Toprak Aslan et al.

George Burba (Referee)

george.burba@licor.com

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This manuscript could result in a significant improvement in the calculations of eddy covariance fluxes of H₂O and CO₂ over the ecosystems and during periods when the fluxes are small (e.g., deserts and areas sublimation for H₂O, winter and offseason for CO₂ etc.), and in the calculations of eddy covariance fluxes of CH₄, N₂O, Ammonia, Isotopes and other "small-flux" species in most situations and cases.

Particular improvements should be observed when constructing long-term budgets,

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when long periods of extremely low uptakes or releases are typically followed by short periods of large releases.

Another advantage of the proposed technique is the ability to reasonably automate or semi-automate it so that numerous non-micrometeorological researchers who measure small fluxes increasingly frequently can take advantage of this new improvement.

I have included over 200 suggestions, as track changes and comments, in the attached file. Most are minor, however few are major:

1. It would be very helpful if authors could illustrate the actual fit and how it is different vs and convention technique (see specific comments). A simplified graphical example or two may go a long way. Reader needs some feel for what is changing and how much.
2. Examples of correction factors from the simulated dataset, and also from a few real-life datasets would also be helpful.
3. The need for non-time-lag adjusted cospectra should be explained very carefully. I suggested some ideas in the attached. Without such explanations, the two non-time-lag adjusted cospectral approached seem like artificial issues created solely for the purpose of solving them.
4. In the Conclusions section, it may be very useful to provide an assessment on the ease and reliability of the automaton for each of the compared techniques. I have included some ideas. The full impact of the newly proposed technique would only happen if a broad community accepts it and start using it. Automation or semi-automation is one of the keys to such acceptance and use.

I am not sure if these suggestions require Minor or Major Revision. Probably a medium one :) I have indicated the Minor Revision but would let authors and Editor decide on this.

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Please also note the supplement to this comment:

<https://amt.copernicus.org/preprints/amt-2020-478/amt-2020-478-RC2-supplement.zip>

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