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Comment

Interactive comment on “Nitrous oxide net exchange in a beech dominated mixed forest in Switzerland measured with a quantum cascade laser spectrometer” by W. Eugster et al.

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Received and published: 29 June 2007

General comments

This manuscript is largely methodological in that its primary objective is to establish whether sensible measurements of N₂O flux can be obtained by the coupling of a quantum cascade laser spectrometer and an eddy covariance system. Overall, this manuscript is well written and meticulously addresses the various uncertainties associated with the high frequency N₂O measurement. They also present an objective algorithm to filter out measurements that are considered unreliable.

Specific comments

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- The title of the paper should more adequately reflect the methodological nature of the study.

- The criterion of significant correlation seems a logical and objective criterion to use to filter out flux estimate of poor resolution. However, it confounds two possibilities : that the correlation is near zero because the flux is too small, or that the flux is non-zero but the correlation is poor due to other sources of uncertainty. By replacing these rejected values by zero (page), the authors clearly believe that the poor correlation is because of low flux. It would have been interesting to show a figure with the flux distribution for the rejected flux measurements.

- The authors examine, for comparative purposes, the CO₂ and H₂O fluxes derived from the laser spectrometer with those derived from the well-tested Licor. While the H₂O fluxes seem to match very well, the true test is not to plot the daily curves of CO₂ or H₂O fluxes (as in Fig. 6) but rather simply have correlation plots of the fluxes estimated with the two different instruments, both for CO₂ and H₂O. If the correlation is poor (which I think it is for CO₂ taken from the two instruments), then part of the rejected measurements might be more the result of imprecise measurements rather than low flux.

Interactive comment on Biogeosciences Discuss., 4, 1167, 2007.

BGD

4, S712–S713, 2007

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