

Interactive comment on “Intercomparison of fast response commercial gas analysers for nitrous oxide flux measurements under field conditions” by Ü. Rannik et al.

Anonymous Referee #2

Received and published: 23 September 2014

The authors address a study on the inter-comparison of state-of-the-art equipment to measure eddy covariance fluxes of N₂O. The topic is well within the scope of the Journal, and the material presented here constitutes a very valid dataset for the research on N₂O exchange between surface and atmosphere.

The equipment used includes the latest generation of analysers (continuous wave quantum cascade, cavity ring down, and not) as well as the predecessors (pulsed quantum cascade and lead salt diode lasers) and the information given puts the different technologies in perspective, highlighting the different abilities of each system with regards to flux measurements. The newer technologies allow much better evaluation of surface atmosphere exchange, especially when it comes to observation of non- agri-
C5342

culturally managed land: the paper quantifies the differences in uncertainties as well as detection limits of the different systems, and this is very useful to address future users in choosing the right equipment when measuring fluxes over different ecosystems (especially semi natural).

The description of the field setup is very thorough and can be used as a good basis for a protocol on measurements of N₂O, which so far has not been established or fully agreed by the scientific community.

The scientific methods, and the calculations used in the paper are of high standards and very exhaustive, good care has been used in explaining clearly how the data have been treated.

I fully recommend the publication of this paper in Biogeosciences. Beside its scientific value, the paper reads very well. I have a few comments, which I address below.

P11753 Could the authors add some information (one sentence) about the calibration of all instruments, not only for the IRGA and pulsed QCL?

P11759L11 “the” is missing before method

P11759 L16-20 the sentence is not entirely clear. “higher values” refers to what?

P11760 L8 “the” before expression

P11760 L18 I guess this is for H₂O: could you repeat it in the text?

P11760 L19 lines (plural)

P11760 L24 delete “frequency”

P11760 L26 add “the” before sampling.

Interactive comment on Biogeosciences Discuss., 11, 11747, 2014.