Biogeosciences
Discussions
Open Access

Interactive comment on "Calculations of automatic chamber flux measurements of methane and carbon dioxide using short time series of concentrations" *by* N. Pirk et al.

Anonymous Referee #1

Received and published: 29 September 2015

This manuscript presents CH4 and CO2 fluxes measured at five different field sites located in peat forming wetlands using the closed chamber technique. To calculate the fluxes different models were used. The manuscript contributes to the still ongoing and important discussion on which regression type (linear or nonlinear) should be used to avoid serious bias of flux estimates. It also shows a possibility how to use such data sets for a partitioning of the net CO2 flux into photosynthesis and ecosystem respiration which is particularly important for high latitude sites as night fluxes are missing during the summer months. The topic of the manuscript is well within the scope of the journal. The paper meets a basic scientific quality, it is well structured. The results are presented in a clear way and discussion is comprehensive. I really like the figures, they

are excellent. The reply on the comment of Anna is very good and detailed so it might be worth to think about how it can be included in the paper. I highly recommend this paper for publication with a few minor revisions for clarity.

Minor comments: 1. Please state more clearly the aim of the study; did you want to improve the available models or to show the differences between the sites? 2. I was wondering why do you call the fluxes calculated using the linear regression independent flux estimates? It is the same measurement using the same technique and measurement device at the same time and at the same plot. In my opinion it would be more obvious for the reader if you just call it the linear flux estimate. 3. In the text you mainly focus on the site where the difference between fluxes calculated using different regressions is small. In Table 2 it is shown that the difference between linear and exponential might be up to 20%. Maybe you could include some ideas on the differences between the sites which might lead to such different results? Or are there other reasons for these differences? 4. Maybe you could give a more detailed advice on the tape for the sealing of the closing lid. Such information might be interesting for other research groups which use automatic chamber systems. 5. I do not understand how you can justify the use of linear regression if the difference to the flux calculated using exponential regression can be up to 20 %. Even though there is a large variability in nature it is important to calculate the fluxes as accurate as possible.

Interactive comment on Biogeosciences Discuss., 12, 14593, 2015.