

Interactive comment on “Decadal variability of soil CO₂ NO, N₂O, and CH₄ fluxes at the Höglwald Forest, Germany” by G. J. Luo et al.

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Dear Chris, thank you very much for your very helpful and constructive comments, which we indeed appreciated. Below you will find our answers and replies to your points. From our point of view the most important ones are dealing with a) empirical model development, b) gap-filling procedures and c) exploration of additional controllers of GHG fluxes at the Höglwald site. In short a few general comments on these three bullet points: a) The manuscript was not thought to explore gap filling strategies for NO and N₂O, but we picked up your idea (and also of Kim Pilegaard and reviewer #1). We therefore changed our strategy. We now use daily mean values (we stick with daily measurements since subdaily flux measurements are not as robust due to failures of single chamber measurements) for the development of empirical models (linear and

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non-linear approaches). Nevertheless, the idea behind the development of empirical approaches is not to gap-fill but to explore if easy to measure parameters can be used to simulate fluxes at different time scales. b) The empirical relationships found were used for gap filling and in Table 3 we now provide estimates of annual fluxes with and without gap filling of data. c) The point with the additional controllers of GHG fluxes is valid, though respective datasets are not complete. We now explore GPP values from tower measurements at the Höglwald site as well as N deposition (throughfall values) as drivers of soil trace gas exchange.

We are addressing all your comments in more detail in the attached PDF document.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/8/C6142/2012/bgd-8-C6142-2012-supplement.pdf>

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