Biogeosciences Discuss., 6, S431–S432, 2009
www.biogeosciences-discuss.net/6/S431/2009/

Biogeosciences Discussions

Interactive comment on "Seasonal variation of gross nitrification rates at three differently treated long-term fertilisations sites" *by* C. F. Stange and H.-U. Neue

Anonymous Referee #1

Received and published: 11 March 2009

The authors have done extensive work on validating the BaPS system with the N-15 pool dilution technique, providing a full season of observation of gross nitrification in three differently fertilised fields, reproducing their observations in a model, and determining N2O leakage rates during nitrification. Together with the sometimes unusual linguistic style, the multitude of different aspects make the paper a heavy read. Some relief, without great loss, could be achieved by completely dropping the parts on N2O and the modelling. Figure 2 shows the same seasonal pattern for gross nitrification and temperature, suggesting temperature to be the dominant driver of nitrification, confirming what we had expected anyway in a situation where moisture remains within the broad range where it is not limiting. Different modelling approaches were found to be

similarly accurate. Whether differences between observations and model results are due to model deficiencies or result from noise in the observed data is hard to say. Consequently, the observations do not lend themselves for a proper model validation anyway.

From my point of view, the manuscript needs substantial revision aimed at reducing its length and increasing the focus. I would propose to limit a revised version to: a) the BaPS validation with the N-15 pool dilution technique; b) the seasonal variation in gross nitrification rates. Point b) should also include measured CO2 fluxes as a proxy for mineralisation rates. Also the measurements on the standardised samples should be shown with associated CO2 fluxes. It may well be that smaller coefficients of variation in gross nitrification rates of standardised samples, compared to field-fresh samples, are related to decreasing coefficients of variation in CO2 fluxes.

Interactive comment on Biogeosciences Discuss., 6, 1565, 2009.