

Interactive
Comment

Interactive comment on “The effects of management on ammonia fluxes over a cut grassland as measured by use of dynamic chambers” by M. David et al.

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General comments:

The paper reports field experiments with dynamic chambers of ammonia emission from intact, cut and fertilized grassland. It is found that the emissions from intact grass sword was very low and because of the artificial conditions created by the chamber the flux under realistic conditions would probably be a deposition flux. Emission was much higher from cut grassland and very high from fertilized grassland.

The issue is relevant in order to understand effects of management on NH_3 exchange. The paper confirms previous observations but in reality adds little new. As seen below

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there are several critical points raised on this paper (also by reviewer #2). The paper overlaps quite substantially both in methodology, scope and discussion with another paper by the same leading author (Biogeosciences Discuss., 6, 1625-1655, 2009), submitted to the same special issue. It should therefore be considered whether these two papers should be merged into one.

Specific comments:

p. 4, l. 4-5: More details are needed about the chambers. The turbulent characteristics within the chamber is dependent on the air flow in relation to the chamber volume. The volume ranges more than 3-fold with a more or less constant airflow. This should also be taken up in the Discussions section.

p. 5, sect. 2.2: It is not very clear how the three available chambers were used. Were they replicates? Were the plots used for the three treatments the same? What about steel frames? If any, when were they put into place?

p. 5, l. 9: Why were two different analyzers used (AMANDA and TULIPA). Were they intercalibrated?

p. 7, l. 21: What does it mean that equilibrium was not reached? Did the emission still increase? In that case, why was the experiment stopped?

p. 8.ff. Discussion: I miss an in-depth discussion on the effects of the artificial environment created by the chambers on the measured flux. This should include issues of changes in turbulence, relative humidity, temperature, the use of zero air and the changes in compensation point.

p.12, l. 24: Why are the results of ammonia emission from all the days following fertilization not reported? It seems from p. 5 that continuous measurements were made from 7-10th June. However, in the text only results from the 2nd day (9th June ?) after fertilization are mentioned and it is guessed what the emissions were the day(s) before.

p, 13, Conclusions: It is stated that by using dynamic chambers it is possible to "continuously measure ammonia emission at the plant level for different management events". I actually do not see that this is really demonstrated by the presented experiment. If the same plots were used for the three phases of management, I miss a figure showing the emissions over the full period. If the three chambers were used as replicates, I would also like to see the variation between these. If different chambers or chamber characteristics (volume and flow rate) were used for the different management types, comparison is rather risky.

Table 1: Are "spikes" the same as "inflorescences"?

Figure 1: The units on the vertical axes of the two lower panels should be corrected with superscripts.

Interactive comment on Biogeosciences Discuss., 6, 1599, 2009.

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