

Interactive comment on “Ammonia sources and sinks in an intensively managed grassland using dynamic chambers” by M. David et al.

Anonymous Referee #2

Received and published: 29 March 2009

General comments:

The paper reports flux measurements of NH_4^+ by dynamic chambers. The potential fluxes from soil, leaf litter and green leaves were determined together with apoplastic NH_4^+ concentration and pH. The main results are that the litter is the largest potential source followed by the soil immediately after cutting, whereas the green leaves were mainly a sink for NH_4^+ . A good correlation is found between the fluxes and the compensation point concentration estimated from the measurements of apoplastic concentrations.

Overall I find that the paper has a good experimental approach and that the results and conclusions are clearly presented. There is, however, one point that I find should be

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expressed much more clearly and discussed in larger detail, That is the use of "zero" air (NH_4^+ free air). This fact is mentioned at the end of the discussion and in the conclusions. I suggest that it is pointed out already at the beginning of the discussion and maybe it should even be mentioned in the title; e.g. "Potential ammonia sources and sinks".

I find that the topic is well suited for publication in Biogeosciences.

Specific comments:

p. 1628, l.3: The definition of "litter" is somewhat strange. Normally litter is only dead decomposing leaves lying on the ground. I wonder whether the two fractions included in the definition used here are emitting equal amounts of NH_4^+ ?

p. 1628, l. 19: It is a bit difficult to imagine how the chambers actually look like. A sketch or a photo would be useful.

p.1629, l. 5-10. The conditioning of the air blown into the chambers are probably quite determining for the actual flux measured. As mentioned above, I miss a thorough discussion of this in the paper.

p.1630, l. 27: "air relative humidity" should be "relative air humidity" (also throughout the rest of the manuscript).

p. 1632, l. 19: "stomatal extracts". I suppose these are the analysis of the apoplastic concentrations?

p. 1633; l. 13: "having with a canopy" should probably read "having a canopy ..."

p. 1634, l. 1: "fort he" should be "for the"

p. 1636, l. 18: "nitrogenmight" should be "nitrogen might"

p. 1640, l. 5: " N-NH_4^+ " should be " NH_4^+ -N"

p. 1641, l. 2 "the emissions from the litter" should be "the emission from the litter"

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p. 1641, l. 16. I miss some statistics for the relationship shown in Figure 4. I suggest to include the results of a linear correlation.

p. 1641, l. 24: The reference to Figure 5 should be to Figure 4.

Interactive comment on Biogeosciences Discuss., 6, 1625, 2009.

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