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***Interactive comment on* “The annual ammonia budget of fertilised cut grassland – Part 2: Seasonal variations and compensation point modeling” by C. R. Flechard et al.**

Anonymous Referee #2

Received and published: 23 November 2009

The authors present and analyse an extensive dataset of ammonia fluxes measured over two grasslands with contrasting management. The paper significantly adds to the literature although ammonia flux measurements are mostly reported for grassland type ecosystems, very few are run over long periods of time. The paper is very straight forward, well laid out and easy to read. I only have a few minor comments:

1. There seems to be a large scatter in the relationship of R_w to temperature and R_w to Relative Humidity (Figure 4). It would be nice to attempt an explanation in the discussion. I was wondering if you tried plotting R_w vs. VPD and what would that give.
2. Following on that, you state that derived R_w values are much higher than values

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from earlier parameterisations whereas Xs are rather at the low end of estimates for managed grasslands. Based on the Xs-Rw model and on the sensitivity of the mean Xs to the threshold RH at z'o you presented. Is it possible that deriving a 'higher' Rw parameterisation could lead to an underestimation of Xs. This could be enhanced by the scatter in Rw.

3. Since total N deposition values were different between 2006 and 2007, it would have been interesting to see if this affected background Xs values.

4. Specific comments:

- Page 9640 line 19 replace Echange by Exchange

- Page 9641, sentence starting line 6: Individual measured fluxes. . . not very clear what you mean by "reached upward of +50 mg NH3 m-2 s-1. . ."

Interactive comment on Biogeosciences Discuss., 6, 9627, 2009.

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