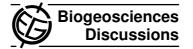
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Interactive Comment

Interactive comment on "Impacts of increasing water and nitrogen availability on ecosystem CO₂ fluxes in a temperate steppe of Northern China" by L. Yan et al.

Anonymous Referee #2

Received and published: 13 September 2010

GENERAL COMMENTS

The manuscript reports on a study of impacts of increasing water and nitrogen availability on ecosystem CO2 fluxes in a temperate steppe of northern China. It contains original research applicable to understanding the consequences of water and N fertilization on ecosystem CO2 fluxes. As such it is within the scope of BG. Even if this is not an innovative approach, the obtained information on ecosystem CO2 fluxes under global change is important to the scientific community. The result section can be strengthened to have the data better presented. I suggest moderate modifications to become acceptable for this journal. I have some suggestions and comments to improve

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the presentation. They are detailed below

SPECIFIC COMMENTS

Abstract L30-33: "The potential contribution.....changes of precipitation amount". These sentences are unclear, please rephrase. L36-37: Revise sentence to read: "Soil moisture regulated seasonal and inter-annual variability in GEP and RE subsequently changed NEE." L38: delete "strength of".

Introduction Introduction is quite well written. L46: delete "with" before associated. L59-63: add more references, not just a study case, suggest to read "For example, some studies....., whereas others...."

Materials and methods L121-122: were the fertilization rates in this study analogous to "grazing and N fertilization and/or atmospheric deposition"? In Result and Discussion sections, you mentioned Q10, but you did not how calculate Q10 in this section.

Results L215-217: This sentence is vague, please rephrase. L217-220: "leading.....", repeat the front. Please re-write. L223-225: Change to "Effects of water and N addition on ecosystem CO2 fluxes had distinct year-to-year variations (Table 2). L232-233: remove "Regression analysis, with NEE, ER and GEP as the dependent variables and ANPP, BNPP as the independent variables, respectively, showed that". L242: should be "Table 4"?

Discussion In general, "Discussion" section was a neatly written presentation. It was good to see (finally) some concluding statements which give a broader take-home message. L288-301: ANPP and BNPP did not significantly change in 2007. Do you have plant N contents data? Increased plant N content may increase GEP and ER. L347-349: rephrase this sentence.

References The number of references cited to support the author's comments is appropriate.

Figs and Tables Table 3 title is the same as Table 2, I think is should be "Results (P-C2904

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values) of two-way ANOVA on the effects of water addition (W), N addition (N) and their interactions on soil temperature (Tsoil, °C), soil moisture (θ v, %), net primary productivity (ANPP and BNPP, g m-2) and ecosystem CO2 fluxes (NEE, ER and GEP; μ mol m-2 s-1)."

Figure 5: In title you mentioned NEE, but no NEE in fig.5.

Interactive comment on Biogeosciences Discuss., 7, 5829, 2010.

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