

Interactive comment on “Response of plant community composition and productivity to warming and nitrogen deposition in a temperate meadow ecosystem” by T. Zhang et al.

Anonymous Referee #1

Received and published: 11 June 2014

General comments to the Editor

This study experimentally evaluated the effects of global warming and increasing N deposition on the composition and productivity of vegetation in a temperate meadow in northeast China. The experiment was well designed and conducted carefully for 4 years; thus, the results obtained are highly reliable. However, this manuscript has three large problems, which are listed below.

1. The novelty of this study is unclear. The effects of warming and N addition to vegetation have been previously studied. Therefore, the authors must review those studies first and show the novelty of their own study in comparison with those studies.

C2355

2. The interpretation of statistical analyses is inconsistent throughout the manuscript. Although the effects of warming and N addition tested by ANOVA and multiple comparison tests were sometimes discrepant, the authors adopted either result arbitrarily depending on the discussion. As a result, contradicting conclusions are found in the manuscript (P. 6659, L. 26–27 vs. P. 6660, L. 14–15).

3. The Discussion is superficial, probably because the novelty and meaning of this study were not clearly shown. The flow of the Discussion is unclear, and most parts are merely a comparison of results between the present study and prior studies. The manuscript appears to be too descriptive.

The experimental quality of this study is acceptable, but the manuscript requires major revision.

Specific comments to the authors

<Introduction>

Please review prior studies such as Shaw et al. (2002) *Science*, Zavaleta et al. (2003) *Ecological Monographs*, Hutchison & Henry (2010) *Ecosystems*, and Gill (2014) *Plant and Soil*, on the effects of warming and N addition on vegetation. And then please show the novelty of your study in comparison with these studies.

<Materials & Methods>

How did you measure the frequency and cover of each species?

As arid vegetation is sensitive to the amount of precipitation, it is preferable to show precipitation data of the experimental period.

P. 6652, L. 15: Remove the terms “species richness.”

<Discussion>

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P. 6656, L. 15–16: According to Table 2, the effect of warming is not significant for all the vegetation parameters.

P. 6656, L. 20–21: Please show evidence that warming increased the number of the forbs species.

P. 6656, L. 22: I think the opposite is true. This may be related to the changes in soil moisture induced by warming.

P. 6656, L. 24–25: Please provide the aboveground biomass of the graminaceous species. This should be possible, as you counted the number of individuals and estimated the aboveground biomass for each species.

P. 6657, L. 20–22 and L. 28–29: Please provide data supporting these discussions. I think you can show the changes in abundance of *L. chinensis*, because you surveyed the vegetation according to the species.

P. 6658, L. 15: The description of the result is incorrect. According to Table 2, the effect of warming was not significant in graminoids or forbs.

P. 6658, L. 21–27: This discussion is too abrupt and unnecessary. I recommend deleting it.

P. 6659, L. 16–18: Please show evidence. The relationship between aboveground biomass and precipitation should be provided.

P. 6659, L. 19–20: Incorrect description of the result. Significant decreases in aboveground biomass due to warming were found only in 2006 (Fig. 4a).

P. 6659, L. 23–24: Please discuss why the effect of warming differed among years.

P. 6659, L. 26–27: This description contradicts that on P. 6660, L. 15. Interpretation of results must be consistent throughout the manuscript.

P. 6660: The Conclusions and Implications should be more concise.

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P. 6660, L. 7–9: Incorrect description of the result. Evenness was not significantly affected by warming or N addition (Fig. 2b, Table 2).

P. 6660, L. 15: This contradicts the description on P. 6659, L. 26–27.

Interactive comment on Biogeosciences Discuss., 11, 6647, 2014.

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