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Interactive comment on "Drought in forest understory ecosystems – a novel rainfall reduction experiment" *by* K. F. Gimbel et al.

Anonymous Referee #1

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General comments:

This study attempts to address how drought impacts the forest understory ecosystems by designing a novel rainfall reduction experiment. They described their field design of rainfall exclusion in detail, and presented the results of drought effects in the first year. In general, the logical and language are good enough to understand. However, there are several concerns to be addressed before it can be published.

First, how their rainfall manipulation experiments can prevent the soil water flow from the surrounding to the plots, especially for the subplots with only 3m*3m? As they admitted, the adult trees could extract water through root systems from outside. This issue needs to be addressed.

Second, in the manuscript, they presented both the experiment design and the drought effects on forest understory ecosystems in the first year. Generally, after the disturbance, the ecosystem response to drought in the first year is not good information. Hence, it's not a good idea to address the point of drought effects at this stage. It's better to focus on the novelty and unique of their experiment design.

Third, the drought conditions in the natural settings are generally characterized by a long dry period and some intense rainfall before or after the drought. From their Figure 4, the removal of rainfall is quite uniformly distributed over the growing season. Can this design represent the natural drought events?

Specific comments:

Abstract

The first sentence is not clear. In my opinion, changes in precipitation patterns is part of climate change, rather not climate change affecting it. Also, they need one sentence which stated how novel is their experiment.

Introduction

They need provide more information about previous studies in which how they make their rainfall manipulation experiments and the drawback.

Material and methods

2.1 This part about the sites could be simplified. A table could be more clear.

2.4 Specific leaf area has special definition as the ratio of leaf area to dry mass. Need another term for LAI.

Discussion

There are many conclusions which are not support by the experimental results, at least at this stage, but from other references or 'expect'. This should be avoided. As

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suggested in the general comments, the discussion of drought effects is not appropriate from only one-year data. They should focus on the experiment design.

P14337, L16-19: why not measure CO2 flux?

P14337, L20-28: for soil moisture, I would say that there are some effects from soil water flow between outside and inside the plots.

P14338, L1-5: We knew this problem for long time. How did you address this issue?

P14338, L15-28: These conclusions are not support by the results at this stage.

Conclusion

P14340, L1-4: The conclusion cannot be 'expected'.

Interactive comment on Biogeosciences Discuss., 11, 14319, 2014.

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Interactive Discussion

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