Biogeosciences Discuss., 11, C6246–C6248, 2014
www.biogeosciences-discuss.net/11/C6246/2014/

Biogeosciences Discussions
Open Access

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

Anonymous Referee #2

Received and published: 28 October 2014

The paper has an interesting forest hydrological goal as indeed we would like to know how understory will react on changes in climate. The idea of the research is to manipulate precipitation above the forest floor and then look to the consequences for soil moisture, soil hydrological functions, and water uptake as well as vegetation structure but also allowing to include more in-depth studies such as assessments of the microbial community structure." Although it is interesting to study this, the paper lacks any in depth hypotheses. What did the authors expect from the experiment? What are the findings from previous experimental and modeling studies. The paper finally turned out to be a study how well they can construct a roof under the canopy. Although this is important, the paper is now written to understand ecosystem consequences, while the experimental design was only one year without having any statistically differences. They finally conclude that the roof structure itself also has the problem that adult trees

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

can extract water from the surrounding, which is already the problem for decades by these manipulation experiments. So I do not see why the system is that innovative. In the whole paper I can not find any interesting point that increases our understanding of the system. I therefore recommend not to support publication of this paper in the present form.

Pg 14322, L19-20: How will ecosystem response depend on ecosystem stability? This is a very important question from ecology. But what is ecosystem stability, can you measure this? It is unclear why the authors have stated this. Do they refer to the stability-diversity debate, as the have included in their introduction microbial community structure?

Pg 14330 L3-5: The specific LAI was measured, but unclear what this is. It seemed to be the total LAI assuming that the leafs are horizontal. Interesting from an ecohydrological point of view is the real LAI, so including the angle of the leaf. Why didn't you measure this?

Pg 14330 L19: Interesting are the experiments with phytometers, but it is unclear to me how this will work.

Pg 14331 L9: You measure evapotranspiration in the gas chambers. I do not understand this, I assume that you measure the transpiration and not the evaporative fluxes, right?

Pg 14333 L20: Interesting would be how CO2 will change under the canopies as I would expect higher values. This would be a nice research, however, the authors didn't look to that.

Pg 14333 L25: Now I am lost. What kind of significant effects? We are now discussing your results while you came up with references

Pg 14335 paragraph 3.4: Plant community and phytometer: More information is needed for the phytometer, what are the rooting depths, are they different. How well

BGD
11, C6246–C6248, 2014

are they performing.

Pg 14335, L 14: If there is no significant difference then a tendency is not interesting. It is not significant so.

Pg 14335, L23: Interesting that there is an interaction effect between drought and site, however, why? Do you have a hypotheses on this, e.g. due to higher storage capacities? The authors doesn't give any information about this.

Pg 1433, L4-6: This is the only interesting result I would say, and it would be great to understand this. Apparently the ecosystem can adapt in such away that the functioning remains the same. Interesting would be to find the shift, but for that the system needs to be run for more years with probably more extreme drought and fixing the problem that the roofs are too small.

Pg14337, L20: The work of Dermody et al (2007) is work on CO2?

Pg14338, L1: The problem that the soil under the roof is influenced by trees rooting outside the roof is always the problem. This is why the roofs should be made bigger and I hoped that this was the case with this study. It means that still all interpretations should be made with care.

Pg 14338, L12: Of course stress induced by drought may alleviate competitive exclusion, but indeed I would expect that shifts in species will take more time. So this paragraph is a bit confusing, as later on you only talk about effects in fluxes by (e.g. Leuzinger et al. 2011) and not in species shifts. As your experiment is not long enough and not strong enough (L26, p 14338), your experimental design can not say anything on these processes

Pg 14339 L22: We conclude that our innovative roofing . . . etc: But you have not tested anything. Why innovative, as you still have the problem of adult tree extracting water outside the roof.

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