

Interactive
Comment

***Interactive comment on “Biomass production in
experimental grasslands of different species
richness during three years of climate warming”
by H. J. De Boeck et al.***

H. J. De Boeck et al.

Received and published: 5 February 2008

We will comment upon the two major concerns raised by this referee. We will address all other issues in the full revision.

Ref 2: "1- In order to avoid a confounding effect between species richness and species identity the authors used species from three functional groups to create each of the S=3 communities, with each species combined only once with any other species (page 4610). Nevertheless, the six replicates of the S=9 communities always used the same 9 species (total pool of species) with a different internal arrangement. In this way, species composition is confounded with species richness and there can be a variance reduction effect (sensu Huston 1997). For example, this is probably why when comparing RSDs,

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



the differences in root distribution between communities proved smallest at S=9 (page 4613, line 22)."

Author reply: We are aware of this statistical concern. However, we have always tested the ANOVA assumption of homogeneity of variance using Levene's test. This resulted in non-significance throughout all analyses, i.e. the variance was consistently considered to be homogeneous among the different S-levels. This can also be observed (visually) in the different graphs. While we might indeed theoretically expect lower variance at S = 9, this was not the case. We will specifically include the statistical information in the revised manuscript, so as to clarify the statistical soundness of our results. With regards to the comparison of RSDs among S-levels, we will omit this, as these findings are not discussed anyway.

Ref 2: "2- While reading this paper one is referred to other papers on the same experiment written by the same authors (or part of the authors) mainly in the discussion section (for example page 4614 and 4615). The authors decided to have data from this experiment published in several papers:

a) a paper on the effect of climate warming and plant species richness on water use (De Boeck et al. 2006a) b) a paper on above- and below-ground productivity (first growing season) (De Boeck et al. 2007a) c) a paper on CO₂ fluxes ((De Boeck et al. 2007b) d) a paper on photochemistry (Gielen et al. 2007) e) and now a paper on above and below-ground productivity over the three years of the experiment.

The authors are entitled to follow this strategy of publication and, as scientists, we all understand that publishing is crucial for career development (publish or perish!). However, I have the feeling that this approach can lead to some overlap and may hinder a more substantial and clear contribution that could have been made if, for example, this paper had included at least data on water use and availability. This was the approach followed in De Boeck et al. (2007a) where above- and below-ground productivity during the first growing season of this experiment was discussed including the soil water data

which gave a much more comprehensive approach to data interpretation and analysis."

Author reply: In the introduction, we explain why we think this strategy is worthwhile: "The current study investigates whether these effects were merely short-term responses, as such transient effects have been found in other treatment studies (e.g. Calfapietra et al., 2003), or whether they were persistent or gained in importance during three years. Importantly, the substantial knowledge gained through process-based studies in the same experimental platform, i.e. on autumn physiology (Gielen et al., 2005), water use (De Boeck et al., 2006a), photochemistry (Gielen et al., 2007) and CO₂ fluxes (De Boeck et al., 2007b) enables us to causally explain observed productivity responses."

In other words: apart from investigating whether productivity effects observed in the 2007(b) study were transient and how they evolved through time, we use the results obtained from our prior process-focussed studies to discuss how biomass (the end-product of all responses) was affected by changes in climate and S-level. This in-depth discussion could be regarded as a major strenght of the study, although we understand that the reader may prefer to have more data closer at hand. We are prepared to resolve this by including a table with averages of soil water content, evapotranspiration, water use efficiency and CO₂ fluxes for both temperature treatments and all S-levels. This would give a good overview and be helpful in interpreting our discussion, while the studies which the data originated from would still be of interest to those readers that wish to have more detail.

Interactive comment on Biogeosciences Discuss., 4, 4605, 2007.

BGD

4, S2584–S2586, 2008

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

