**Cover letter - GCB asks authors to answer five questions rather than submitting a cover letter**

1. **What is the scientific question you are addressing?**

The key questions of our work are: (1) What are the impacts of precipitation changes on the abundance and diversity of forest soil and litter invertebrate fauna? (2) What are the major determinants of the impacts of precipitation changes on abundance and diversity? (3) What are the major biases in studies of the impacts of precipitation change on forest soil and litter invertebrate fauna?

Given the importance of soil and litter fauna in regulating multiple soil functions in forests and the anticipated changes in precipitation patterns under climate change, we think this topic is of interest to a wide range of academics and thus is suitable for a journal with a broad readership like Global Change Biology.

1. **What is/are the key finding(s) that answers this question?**

We answered our questions using a global meta-analysis of 352 comparisons between ambient and altered precipitation from 30 field studies.

We found that precipitation reductions decrease the abundance of soil and litter fauna, while precipitation increases have the opposite effect. However, impacts on diversity are less pronounced. This may result from changes in local diversity as a result of perturbations being uncoupled from changes in community composition.

Most interestingly, we found that the impacts of precipitation change on abundance depend on organism body size: mesofauna were sensitive to changes in precipitation magnitude but micro- and macrofauna were not. This is the first time, to our knowledge, that this observation has been made. We hypothesise that this is the result of differences in sensitivity as a result of differences in ability to avoid predation under precipitation change, physical adaptations to dry conditions, and the availability of food sources.

1. **Why is this work important and timely?**

Our meta-analysis shows, for the first time, that the effects of precipitation changes on soil and litter fauna are size dependent. Such changes may impact important soil functions performed by mesofauna such as litter decomposition. As such it is important that management attempts to reduce the impacts of precipitation change, particularly precipitation reductions, on soil fauna. This is particularly timely given the recent development of the EU soil strategy, of which one of the key objectives is to protect and sustainability manage soils.

In addition, our work represents one of the most robust global-scale meta-analyses to have been carried out to date in soil ecology and as such represents the gold-standard of evidence on this topic.

1. **Does your paper fall within the scope of GCB; what biological AND global change aspects does it address?**

Yes, our manuscript fits the scope of GCB. It addresses precipitation change as a result of global climate change and its impacts on soil biodiversity.

1. **What are the three most recently published papers that are relevant to this question? This information will assist the Editors in selecting reviewers**

Peng, Y., Peñuelas, J., Vesterdal, L., Yue, K., Peguero, G., Fornara, D. A., Heděnec, P., Steffens, C., & Wu, F. (2022). Responses of soil fauna communities to the individual and combined effects of multiple global change factors. Ecology Letters, 25(9), 1961–1973. <https://doi.org/10.1111/ele.14068>

Zhou, Z., Wang, C., & Luo, Y. (2020). Meta-analysis of the impacts of global change factors on soil microbial diversity and functionality. Nature Communications, 11(1), 3072. <https://doi.org/10.1038/s41467-020-16881-7>

Phillips, H., Cameron, E. K., Eisenhauer, N., Burton, V., Ferlian, O., Jin, Y., Kanabar, S., Malladi, S., Murphy, R., Peter, A., Petrocelli, I., Ristok, C., Tyndall, K., van der Putten, W., & Beaumelle, L. (2023). Global change and their environmental stressors have a significant impact on soil biodiversity -- a meta-analysis. *Authorea Preprints*. <https://doi.org/10.22541/au.167655684.49855023/v1>