

Interactive comment on “Nutrient dynamics along a precipitation gradient in European beech forests” by I. C. Meier and C. Leuschner

Anonymous Referee #2

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This study tried to clarify nutrient dynamics in beech forests along a precipitation gradient. I believe that conducted researches potentially have merit and are of interest for the readers of "Biogeosciences", however, some major problems do not make this paper convincing.

The most serious problem was very incomplete data presentation. Since the central objective of this study was to clarify nutrient dynamics in beech forests along a precipitation gradient, it was too unkind for the readers not to show their results along the precipitation gradient (Figures did not cover the entire data). Instead of only showing correlations between precipitation and biogeochemical parameters and/or regression models, the authors should show their results completely. The authors used both the trend along the precipitation gradient and the comparison between two extremes (sites

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with > 900mm and those with < 600mm) for their data presentation. However, the comparison between two extremes was the extraction of partial data based on an arbitrary classification, and would not be valid. Therefore, in the present condition, the readers could not recognize the validity of discussion in this paper.

The description of "Materials and methods" was also incomplete. For example, for the sample preparation and chemical analyses of soils, a more concrete description was needed. For statistical analyses, there was no description for correlations, and the readers could not understand whether correlations and regressions were analyzed for mean values or not. I could not find the results of ANOVA with post hoc test in the manuscript.

In addition, for the second hypothesis ("the accumulation of organic matter on the forest floor and the built-up of nutrient stores in the organic layers is reduced in a drier climate"), the readers could not understand why the authors could hypothesize this in the present "Introduction". This was partly because there seemed to be a contradiction between the second and third hypotheses. The authors needed to clarify the connections between a precipitation gradient and their hypotheses.

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