

Interactive comment on “Switch of fungal to bacterial degradation in natural, drained and rewetted oligotrophic peatlands reflected in $\delta^{15}\text{N}$ and fatty acid composition” by Miriam Groß-Schmölders et al.

Anonymous Referee #2

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General comments: The manuscript has a nicely developed and clear message. The Results and Discussion section is convincing and requires very little editing and the Figures and Tables support the message very well. To me, the Introduction is the part of the manuscript that requires the most attention. The research methods and questions need to be prepared in more detail and especially the role of roots and mycorrhiza should be considered in more detail. In summary, I rate the manuscript as GOOD and recommend publication following revisions. For consideration in the journal SOIL, the soil type/classification need to be adequately described. This is currently not the case

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and needs to be done. In some figures, but also text the acrotelm-mesotelm designations are an issue: Is there an acrotelm or not? Figure 3 shows an acrotelm/upper mesotelm, but in the remainder of the manuscript, an acrotelm is not mentioned. On the other hand, an “upper” and “lower” mesotelm are introduced. Please find a consistent way to handle the issue. Please check the manuscript again for signs of sloppiness: Throughout the manuscript, the abbreviations for Tables and Figures are inconsistently spelled; sometimes capitalize and sometimes not. Somewhere in the text, I quit noting this in “Specific comments”. In the references section, journal titles are generally spelled out, but sometimes not. Please edit following journal guidelines.

Specific comments: L 12: I'd rather say "Since the last centuries, they are degrading." This process is not finished. L 12: “2” in CO₂ in subscript, please L 14: Why not delete “in the near future”? This is happening now. L 16: “Metabolic processes” sounds better, doesn't it? L 28: please replace “are rising” by “rise” L 32: “differs”, not “differ” L 38-39: There are quite a few approaches to describe “peatland condition”. But what is “peatland condition”? And are the methods you are proposing more time and cost efficient than others? You are hypothesizing that ¹⁵N isotopes could be such a tool. Fine, but PLFA analysis isn't that cheap and you are also heavily relying on that method. Please explain in more detail. L 74: “lead”, not “are leading” as this is a general phenomenon
Introduction chapter in general: Biogeochemical transformations as a consequence of rewetting re not introduced, but in the last paragraph of the introduction, you are looking for changes of ¹³C and ¹⁵N with the onset of the rewetting process. L70-82: This paragraph should be rewritten. It lists methods, but the aim/objective/hypothesis is not sufficiently clear. What are “specific peatland conditions” (Line 70)? Many methods are listed without having been introduced before. Please introduce these methods. When looking at d¹⁵N, not only decomposition must be considered, but also mycorrhizal activity. Are you expecting root effects on d¹⁵N? Chapter 2.2. Coding of the sites is inconsistent. Some codes appear to relate to minerotrophic or ombrotrophic hydrology or drained vs. natural status, but others don't. Please code in a consistent way. Chapter 2.3: What does LOD1, LON3, DDC3, DNM1 mean? Did you take replicate cores

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at these sites? From which depth were samples taken? L 219: Fig., not fig. L 221; distinctly, not distinct; seem, not seems L 247: Tab, not tab (2x) L 250: "more strongly", not "more" L 283-284: This sentence is incomprehensible. Does fungal biomass decrease in peatlands? Where? When? Please explain. L 287: Drollinger, not Dröllinger L 328: "change" instead of "are changing"

References section: L 246, 420: Biogeosciences, not Biogeoscience L 443: The journal is called Wetlands Ecology and Management! L 444: Post drainage! Table 2: Sph. capillifolium, not capilifolium Supplementary data: This xls. file is not for publication. It requires formatting and translation.

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