

Interactive comment on “Forms of organic phosphorus in wetland soils” by A. W. Cheesman et al.

Anonymous Referee #2

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General comments: It is a well readable paper which presents all relevant data in which the interpretation was based. Phosphorus analysis is a developing field and needs more comparable analysis like this to better assess the natural abundance of different kinds of phosphorus compounds. In the field of ^{31}P NMR, papers describe the methodology in detail in contrast to many other publications to be found. In this paper, the method section is in detail, well written and understandable with even much more information than found in other literature, very good!

Specific comments: The statistics used for the site groupings has already been addressed in the previous comment. Further, I have stumbled over the correlations and interpretations leading to the factors reflecting an active vs. an inactive microbial community. It would be helpful to better clarify these interpretations. The statement was

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that the inorganic polyphosphates correlate positively with microbial biomass for which the conclusion was that the higher the quantity of inorganic polyphosphates the greater the microbial activity, resp. the more active. Or? From reading this text, I was then questioning the role of organic molecules for reflecting microbial activity. In turn, I would expect a higher amount of organic P if a more active microbial community is present. More active microbes = higher amounts of cell wall debris, nucleoside acids etc. Or? Possibly, my assumptions can be addressed by stating the role of inorganic polyphosphates in cell metabolism (indicated in L447-448, why polyphosphates when scarce resource?), their abundance vs. the abundance of the organic load from cell debris and why polyphosphates represent cell activity. In principle, even if correlation is good, does this have an underlying reasoning? And if yes, why activity and not e.g. total microbial abundance?

Technical queries: L 96 Do different treatments (air drying, field fresh. . .) affect results?; L 129-130 Does air drying not also possibly change the sample?; L 233 “difference” without s; L 345 “shape” is out of place I think; L 346 Was a correlation done for vegetation and climate?

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