

## Comment on soil-2021-140

Anonymous Referee #2

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Referee comment on "Stronger microbial nutrient limitations in subsoil along the precipitation gradient of agroecosystem: Insights from soil enzyme activity and stoichiometry" by Jingjing Yang et al., SOIL Discuss.,  
<https://doi.org/10.5194/soil-2021-140-RC2>, 2022

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Soil enzymes play an important role in maintaining ecosystem quality, functional diversity, and nutrient cycling. The authors investigated the spatial variations in soil enzyme activities and their stoichiometry in soil profile of agroecosystem along precipitation gradient. They highlights the importance of enzyme activities stoichiometry for indication the nutrient limitation for microbe. The results are meaningful for comprehensive understanding of soil enzymes in agroecosystem responding to future climate change. The manuscript topic is timely with this work likely being of interested to a fairly wide readership. Further, the structure, figures and table of the manuscript are clear. However, the authors should highlight the novel of the paper and following issues should be fixed.

- Please revise the hypothesis, e.g. the second hypothesis, the driving factors change with an increase in depth, the driving factors for what?
- Materials and methods section: the MAPdata is important, how did you get these data?
- Line 152, and 157, the full names of SM and TP should be given when they first appeared.
- Line 158, the company information of continuous flow analyzer should be given.
- Line 166, The methodology of enzymes should be revised as The methodology of enzymes activity measurement.
- Line 213, 3.1. Soil properties and their stoichiometry should be revised as Soil properties and nutrient stoichiometry.
- Line 216-218, soil moisture and nutrients (TC, TN, and TP) were positively correlated with precipitation, but this strong correlation was not observed in the subsoil for TC, TC was positively correlated with precipitation in topsoil but not subsoil?
- Line 232, enzyme nutrient stoichiometries?
- Line 294, P-acquiring enzyme was influenced by soil pH and moisture, the authors should give the reason.
- In the discussion section, the author should compare their results with the two hypothesis.
- Line 373-376, these two sentences seems to not relate to the conclusion, the authors should summarize your findings, discuss the implications or give the future research

directions in the conclusion section.