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Biogeosciences
Discussions

Interactive comment on "Spatial estimation of soil carbon, nitrogen and phosphorus stoichiometry in complex terrains: a case study of Schrenk's spruce forest in the Tianshan Mountains" *by* Zhonglin Xu et al.

Anonymous Referee #1

Received and published: 3 May 2018

The authors (Xu et al) have present the results of spatial estimation of soil C, N and P stoichiometry in complex terrains based on a case study of Schrenk's spruce forest in the Tianshan Mountains. The results demonstrated that soil nutrient (C, N and P) concentrations and stoichiometric ratios were related to elevation and climatic variables. This study also discussed the potential application of MLR for estimating their values at large spatial scale. These results are interesting but also are challenged by the methodological questions, and by a lack of clarity in the presentation and interpretation of the study. General and more detailed comments are below. General comments: 1)

The authors stated the application of multiple linear regression (MLR) models in this study. I am not convinced based on the interpretation in introduction and material and method sections. By the way, did you test other models when you stated the reliability of MLR models in discussion? 2) How did you choose the climatic variables (MAT, MAP or others) or did you test these variables in the models based on Aikake Information Criterion (AIC)? Are you sure all the dependent variables (C, N, P and C:N:P ratios) have the same independent variables such as MAT, MAP, Elevation, TTQ, TWM PWQ? 3) I do not understand the purpose of 3.1in result section. It seems to be not well-linked in your result. Could you explain it a little more? 4) There are no page number and line number after line 274. There are a lot of questions can be not listed.

Specific comments: Lines 13-16 This sentence is correct, but not understandable here. Please rewrite and clarify it. Lines 21-22 How many sampling sites do you have collected from 2012-2017? Line 22 which climate variables? Lines 23-25 Please clarify the "different"? Lines 27-28 Suggest to delete it since it is not related to you study. Line 29 Did you analyze the results by other models? Line 30 It may be better to add a sentence to highlight you work and the contribution. Lines 42-49 it is too long and complex. Please rewrite it. Line 49-55 Please write the important ones that are closed to this research. Line 55 Why add the aquatic ecosystems, but this is not your focus on. Line 65 which disturbances? Please add them. Line 67-73 It is not long, and not understandable. Line 75 The year of 2013 is not recent? Line 78-79 What is the meaning for moderate spatial dependence? Lines 104-110 Please rewrite this sentence. Lines 147-149 Why only combination of elevation and climate variables? Why it is a linear regression but not nonlinear? Line 176 The size of fig 1 is too small. Please add more information on the sampling sites and total numbers. Please clarify why these sites can be representative for the whole forests. Lines 211-217 Did you test the variables based on your data? Lines 229-234 as proposed in general comment 2. There is no line number after line 274. The fig 3, 4 are not high quality. Please change it. 4.2 How can you conclude that reliability of MLR models since you did not analyze the data using other models. There are repeat literature in the references. Please

revise it.

Please also note the supplement to this comment:
https://www.biogeosciences-discuss.net/bg-2017-536/bg-2017-536-RC1-supplement.pdf

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