

Interactive comment on “Agropedogenesis: Humankind as the 6th soil-forming factor and attractors of agrogenic soil degradation” by Yakov Kuzyakov and Kazem Zamanian

Anonymous Referee #2

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The authors introduce a theory of anthropedogenesis – soil development under the main factor ‘humankind’ – the 6th factor of soil formation, and deepen it to encompass agropedogenesis as the most important direction of anthropedogenesis. The theory of agropedogenesis is a very important issue in pedology and there is a clear gap in knowledge related to this issue and the outcomes of this research certainly help to better understand the dynamics of soil development under agricultural practices. Although the contents of the manuscript is fairly good, it would benefit from better editing (e.g. grammar and clarity), which would improve its clarity. In addition, some necessary improvements are suggested in the following:

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1) More comprehensive literature review on soils [e.g. semi-arid tropical soils] showing no sign of soil degradation by growing agricultural crops in soils. 2) It is also important to discuss more thoroughly, why these soil properties were selected [Master soil properties]. In particular, a reader would like to know whether these soil properties are intrinsically more important than the others or simply more important in this study due to some identified characteristics and assumptions. 3) It is necessary to explain clearly the figures in the main body of the manuscript.

Some other comments are made along with the text: Keywords: I think five keywords are enough. Line 4-5: This first sentence of the abstract should be removed. Line 48-49: Please clarify this sentence “Since the suitable land resources for agriculture are limited and increasingly located in ecologically marginal conditions”. Line 50: add cit. Line 73: run-off irrigation and terracing Line 80: add cit. Line 87: “The human factor can even change soil types as defined by classification systems (Supplementary Fig. 1)”. Figure 1 indicates the convergence and divergence of soil properties! Line 104: add cit. Table 2: justify Table 2 Line 122: climate, organisms, relief and time Line 139: climate, organisms, and relief Line 140: “. . .over time. Thus, morphological soil properties. . .”. This sentence should be rewritten. Line 143: Figure 2. Line 153: add cit. Line 180: climate, organisms, and relief Line 201: How is possible to infer the decreasing in the spatial variability of soil properties in figure 5. Line 847: “(c) and (d) total soil carbon”! Lines 273-lines 299: the definition of phase diagrams would be necessary. Not sure that every Biogeosciences reader is familiar with them.

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