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Interactive comment on "Effect of soil coarseness on soil base cations and available micronutrients in a semi-arid sandy grassland" *by* L. Lü et al.

Anonymous Referee #1

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This manuscript presents an interesting experiment conducted in northern China examining the effect of soil coarsening on soil base cations and available micronutrients. The paper is well-written, clearly organized and easy to follow by the reader. The topics fit within the scope of the journal, although the the authors should highlight how the geochemical data influences soil formation.

I have some comments on several sections:

- In the Introduction the processes inducing soil coarsening around the world are briefly mentioned, but then they are not mentioned along the text. It would be important to discuss which factors are driving soil coarsening in the study area. This would help the reader to better understand the regional setting and, consecuently, the findings presented in this research. - In the Study area the authors should include a reference

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Discussion paper

to some other factors which affect desertification in this region, such as vegetation, lithology (bedrock, sediments?) or aeolian processes (significant?). - Are different soil layers along the sections? If it is homogeneous, mention it. If soil ayer show distinct features, this might have affeted your sampling and therefore your experiment. Please clarify it. - Another thing which you may have influenced your data at depth are cryogenic processes. The area records freeze-thaw cycles during at least 4-5 months per year. Freeze-thaw cycles affect the vertical structure of the soil through cryoturbation activity. How this process may have affect your data? - You present nice data about soil base cations and available micronutrients at different depths, but you do not discuss how they influence soil formation processes (pedogenesis).

Tables are OK, but the paper would substantially improve with 1/2 new figures inluding the site location, soil sections, etc.

Line 41 add comma after world Line 97 change expect to "expected" L. 109 after mm, change to "which defines the area as semi-arid"

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