

Interactive comment on “A Livestock Trampling Function for Potential Emission Rate of Wind-blown Dust in a Mongolian Temperate Grassland” by Erdenebayar Munkhtsetseg et al.

Anonymous Referee #1

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This paper describes an experimental study on the effect of livestock trampling on dust emission using a mini wind tunnel. The subject is interesting from the anthropogenic dust point of view. However, the results presented in the paper seems not very reasonable (in my opinion) about the dust emission mechanism. Also, it does not provide sufficient information for estimating the impact of livestock trampling on the regional dust emission amount. From the dust emission mechanism point of view, there should be more detailed descriptions about the change in the physical condition of grassland surface by trampling. The ratio of the flux $F/F(\text{free})$ is considered in this analysis. However, the reason for taking the ratio is not explained. Physical meaning is not clear. (In addition, the data for $F(\text{free})$ contains big errors as can be seen in Appendix.) Also,

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the reason for describing the ratio by $1+f$ is not clear. It seems the function form to describe the experimental results is rather arbitrary. In Eq. (8), the major term that represents the effect of trampling is proportional to the 8th power of u^* . Is it reasonable? A physically reasonable function form should be used. An important subject would be estimating the contribution of dust emission from trampled grassland. From this point of view, it would be better to discuss the dust emission flux in (trampled) grassland in comparison with that in arid and semi-arid regions.

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