

Interactive comment on “Responses of aeolian desertification to a range of climate scenarios in China” by Xunming Wang et al.

Anonymous Referee #1

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This paper sets up an interesting discussion around the fact that desertification must be addressed at local level. The authors show how variables such as wind velocity, temperature or soil moisture, that use to be related to Aeolian desertification show high variability and even have been found to show negative correlation with desertification indices in different regions in China. Currently research of land degradation in this country is leading the ranking of desertification research (Escadafal et al., 2015) and I support its publication. (please check Escadafal, R., Barbero-Sierra, C., Exbrayat, W., Marques, M. J., Akhtar-Schuster, M., El Haddadi, A., and Ruiz, M. (2015) First Appraisal of the Current Structure of Research on Land and Soil Degradation as Evidenced by Bibliometric Analysis of Publications on Desertification. *Land Degrad. Develop.*, 26:413–422. doi: 10.1002/ldr.2351)

Due to the fact that relevant data are provided only in the supplementary material the

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discussion is a bit difficult to follow. If possible I would recommend to include data on severity of desertification, landscape characteristics of different regions etc. in the body of the main text. In case that it is not possible, I suggest adding some comments to describe the main features of different regions. In this way the authors can find reasons or arguments to support the different correlations found in the analysis.

As I mention in the detailed comments attached, I think that the authors should discard the fact that the lack of relationship between vegetation cover and wind erosion maybe be due to the fact that "NDVI soil" is considering non-erodible areas like crusted soil or rocky surfaces. Soil erodibility must be taken into account. Please check: Algayer, B., Wang, B., Bourennane, H., Zheng, F., Duval, O., Li, G., Le Bissonnais, Y. and Darboux, F. (2014), Aggregate stability of a crusted soil: differences between crust and sub-crust material, and consequences for interrill erodibility assessment. An example from the Loess Plateau of China. *European Journal of Soil Science*, 65: 325–335. doi: 10.1111/ejss.12134

The authors argue that “the intensity of human activity is very low” (line 161) in the study area, and “human activity on desertification have been overestimated” (line 55). This is quite controversial, because in my opinion human activities are in the core of desertification processes. Without human activities we are only looking at natural processes in harsh environments. I think that human activities should not be underestimated. Please have a look at the following papers to find arguments to highlight its role in your region of study : Gao, Y., Dang, X., Yu, Y., Li, Y., Liu, Y., and Wang, J. (2016) Effects of Tillage Methods on Soil Carbon and Wind Erosion. *Land Degrad. Develop.*, 27: 583–591. doi: 10.1002/ldr.2404. Miao, L., Moore, J. C., Zeng, F., Lei, J., Ding, J., He, B., and Cui, X. (2015) Footprint of Research in Desertification Management in China. *Land Degrad. Develop.*, 26: 450–457. doi: 10.1002/ldr.2399.

Please find other minor comments on the pdf attached. Particularly check the scales of maps. Every table caption should be independent from the text. Please explain the meaning of any abbreviation such as NDVI, VFC, PDSI. Please check all the captions.

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Please confirm that such the gap of data to establish correlations between NDVI and VFC is not causing inconsistencies in the Spearman correlation between variables

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/se-2016-59/se-2016-59-RC1-supplement.pdf>

Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-59, 2016.