

Interactive comment on “Soil wind erosion in ecological olive trees in the Tabernas desert (S.E. Spain): a wind tunnel experiment” by Carlos Asensio et al.

Anonymous Referee #3

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The study of Asensio et al. presents a field trial in a semiarid area of Southern Spain where a wind tunnel is used to analyse the influence of material loss from wind on soil properties. They include different soil types in their assessment and also evaluate changes in soil properties in olive groves when they are tilled.

General comments:

The study is somewhat interesting but needs to address some critical issues before publication. The manuscript needs to be revised by an English native speaker. In its current form, some sections are difficult to read due to grammar errors. See some examples below in the first paragraph of the introduction (page 2):

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Line 4: 'as control' should be replaced by 'as it controls'. Line 5: 'and also contribute' should be replaced by 'and also contributes' Line 6: 'The soil degradation' should be replaced by 'Soil degradation'. Line 7: 'lost of vegetation and organic matter and the increase in soil erosion' should be replaced by 'loss of vegetation and organic matter and increase of soil erosion'

Abstract: it needs to focus on the major results and to mention the study area.

Introduction: this section names some available studies but misses some relevant and current publications that would help to introduce and justify the research. See for example:

Borrelli, P., Panagos, P., Ballabio, C., Lugato, E., Weynants, M., Montanarella, L., 2016. Towards a Pan-European assessment of land susceptibility to wind erosion. *Land Degrad. Develop.*, 27, 1093–1105.

Borrelli, P., Panagos, P., Montanarella, L., 2015. New insights into the geography and modelling of wind erosion in the European agricultural land. Application of a spatially explicit indicator of land susceptibility to wind erosion. *Sustainability* 7, 8823–8836.

Cerda, A., Lavee, H., Romero-Diaz, A., Hooke, J., Montanarella, J., 2010. Preface: Soil erosion and degradation in Mediterranean type ecosystems. *Land Degrad. Develop.*, 21, 71–74

Lal, R., 2001. Soil degradation by erosion. *Land Degradation and Development* 12, 519–539.

Lal R (2014) Desertification and soil erosion. *Global Environmental Change*, 1, 369–378.

Methods/Results: Although detailed methods are provided these sections are confusing and should be reorganised. Some of the methods are explained in the results section instead of in the methods, for example: Page 9, lines 6 to 11. Tables and figures: these should be self explainable so when abbreviations are used please explain

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the captions. See for example: soil type (CLO, etc) in Table 1, 2, 4; RRL in Table 2; CM in Fig.2, etc.

Discussion: this section is very poor and lacks consistency. For example, it is explained how the PCA separates variables such as OC contents among soil types but the implications of these differences are not discussed in detail. Although some previous studies are mentioned the authors do not compare their results in a broader context. Soil erosion is currently a major cause of land degradation and relevant at the European and global level. Therefore more studies are needed to improve current models and integrate plot and regional studies to assist decision making. Please see some articles below that could help to elaborate:

Borrelli P, Paustian K, Panagos P et al. (2016) Effect of Good Agricultural and Environmental Conditions on erosion and soil organic carbon balance: A national case study. *Land Use Policy*, 50, 408–421.

Fiener P, Dlugob V, Van Oost K (2015) Erosion-induced carbon redistribution, burial and mineralisation - Is the episodic nature of erosion processes important? *Catena*, 133, 282–292.

Kirkels FMSA, Cammeraat LH, Kuhn NJ (2014) The fate of soil organic carbon upon erosion, transport and deposition in agricultural landscapes - A review of different concepts. *Geomorphology*, 226, 94–105.

Morgan, R.P.C., Quinton, J.N., Smith, R.E., Govers, G., Poesen, J.W.A., Austerwald, K., Chisci, G., Torri, D., Styczen, M.E., 1998. The European soil erosion model (EUROSEM): A dynamic approach for predicting sediment transport from fields and small catchments. *Earth Surf. Process. Landforms* 23, 527–544.

Panagos P., Van Liedekerke M., Jones A., Montanarella L., 2012. European Soil Data Centre: Response to European policy support and public data requirements. *Land Use Policy* 29, 329–338.

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Panagos, P., Meusburger, K., Van Liedekerke, M., Alewell, C., Hiederer, R., Montanarella, L., 2014. Assessing soil erosion in Europe based on data collected through a European network. *Soil Sci. Plant Nutr.*, 60, 15–29

Van Oost K, Quine TA, Govers G et al. (2007) The impact of agricultural soil erosion on the global carbon cycle. *Science*, 318, 626–629.

Van Oost K, Cerdan O, Quine TA (2009) Accelerated sediment fluxes by water and tillage erosion on European agricultural land. *Earth Surface Processes and Landforms*, 34, 1625–1634.

[Interactive comment on Solid Earth Discuss.](#), doi:10.5194/se-2016-65, 2016.

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