

Interactive comment on “Analysis of soil moisture condition under different land uses in arid region of Horqin Sandy Land, northern China” by C. Niu et al.

C. Niu et al.

niucunyang@163.com

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Thank you very much for your constructive comments on our manuscript. The following are responses to your comments:

Question 1: The introduction needs a initial sentence that will inform the reader how important is the land use to keep a sustainable environmental management. See here some references that can help to write this initial introduction that will make your paper very consistent. Parras-Alcántara, L., Lozano-García, B. Conventional tillage versus organic farming in relation to soil organic carbon stock in olive groves in Mediterranean range-lands (southern Spain). (2014) Solid Earth, 5 (1), pp. 299-311. Cited 2 times.

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DOI: <http://dx.doi.org/10.5194/se-5-299-2014> Biro, K., Pradhan, B., Buchroithner, M., Makeschin, F. 2013. Land use/land cover change analysis an its impact on soil properties in the Northern part of Gadarif region, Sudan. Land Degradation & Development, 24: 90- 102. DOI 10.1002/ldr.1116 Leh M., Bajwa, S., Chaubey, I. 2013. Impact of land use change on erosion risk: and integrated remote sensing geographic information system and modeling methodology. Land Degradation & Development, 24: 409- 421. DOI 10.1002/ldr.1137 Mekonnen, M., Keesstra, S.D., Stroosnijder, L., Baartman, J.E.M., Maroulis, J., 2015 Land Degradation and Development. Soil conservation through sediment trapping: a review. DOI:10.1002/ldr.2308 Zhao, G., Mu, X., Wen, Z., Wang, F., and Gao, P. Soil erosion, conservation, and Eco-environment changes in the Loess Plateau of China. Land Degradation & Development, 24: 499- 510. 2013. DOI 10.1002/ldr.2246

Answer 1: In the first paragraph of Introduction, the sentences " What' s more, land use change contributes to the variability of soil moisture, resulting in soil deterioration, agricultural productivity decline and land degradation (Biro et al., 2013; Fu et al., 2003; Leh et al., 2011; Parras-Alcántara and Lozano-García, 2014)" have been added.

Question 2: in the paper there is a need to show how the importance of the soil moisture for the soil system and soil functioning in the introduction Gabarrón-Galeote, M.A., Martínez-Murillo, J.F., Quesada, M.A., Ruiz-Sinoga, J.D. Seasonal changes in the soil hydrological and erosive response depending on aspect, vegetation type and soil water repellency in different mediterranean microenvironments. (2013) Solid Earth, 4 (2), pp. 497-509. Cited 4 times. DOI: <http://dx.doi.org/10.5194/se-4-497-2013> Hewelke, E., Szatylowicz, J., Gnatowski, T., Oleszczuk, R. Effects of soil water repellency on moisture patterns in a degraded sapric histosol. (2014) Land Degradation and Development. Article in Press. Cited 1 time. DOI: <http://dx.doi.org/10.1002/ldr.2305>

Answer 2: In the second paragraph of Introduction, the sentences " Soil moisture influences the soil system and soil functioning, including soil texture, soil temperature, chemical characteristic of organic matter, water loss by evaporation and erosion rates

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(Hewelke et al., 2014; Gabarrón-Galeote et al., 2013). Land use widely contributes to water and soil degradation and desertification (Biro et al., 2013)." have been added.

Question 3: and also you should highlight that the soil system is a key part of the Earth System and the soil moisture need a broad view too... and the soil system offers services.. this is why is necessary to study the soil moisture Hewelke, E., Szatyłowicz, J., Gnatowski, T., Oleszczuk, R. Effects of soil water repellency on moisture patterns in a degraded sapric histosol. (2014) Land Degradation and Development. Article in Press. Cited 1 time. DOI: <http://dx.doi.org/10.1002/ldr.2305> Keesstra, S.D., Geissen, V., van Schaik, L., Mosse, K., Piirinen, S., 2012. Soil as a filter for groundwater quality. Current Opinions in Environmental Sustainability 4, 507-516.doi:10.1016/j.cosust.2012.10.007 Brevik, E. C., Cerdà, A., Mataix-Solera, J., Pereg, L., Quinton, J. N., Six, J., and Van Oost, K.: The interdisciplinary nature of SOIL, SOIL, 1, 117-129, doi:10.5194/soil-1-117-2015, 2015.

Answer 3: In the second paragraph of Introduction, the sentence "Soil moisture is the key component of the Earth ecosystem because it plays an important role in linking the functioning of plants to soil characteristics (Brevik et al., 2015)" has been added.

Interactive comment on Solid Earth Discuss., 7, 1979, 2015.