

Interactive comment on “Estimation of surface depression storage capacity from surface roughness” by Mohamed A. M. Abd Elbasit et al.

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General Comment: The topic treated in this work is potentially interesting, however at my eyes too site specific to be accepted in an international journal such as HESS. Also, probably a journal closed to "Soil" should be more appropriated. /Response: We reported experimental results related to depression storage (DS) estimation based on a general soil roughness parameter called "Random Roughness" (RR). RR can be estimated independently of site, soil or surface condition. Therefore, it is not site specific. The current research proposed and tested a new and simple DS model that can be used to estimate DS capacity for land surfaces with relatively low RR, i.e. Fallow land compared to tilled land. The current model can be used as a subroutine in other integrated hydrological software that estimates DS. So, we think the manuscript is highly

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relevant to the international scientific community.

(1) the literature review seems too poor, I suggest to enlarge it looking at the recent advances in this field; /Response: We have reported recent works (i.e. 2012) that dealt with depression storage in relation to relative roughness. We have made thorough review for the recent literature and updated the introduction section accordingly.

(2) a comparison with other methods available in the literature for the calculation of the surface roughness seems missed; /Response: The model developed here was compared with the most popular DS five models (Table 1) and the results of this comparison is shown in Figures 8 & 9

(3) the case study is very site-specific; it is very difficult to feel about the reproducibility of the method presented in a different context, and also its suitability to be adopted for the analysis of the surface roughness in the field, where the local micro-morphology is more complex.

/Response: Depression storage estimation was based on a general soil roughness parameter called “Random Roughness” (RR) that can be independently estimated for any site, soil or complex surface condition. Therefore, it is not site specific. We used gypsum-covered surfaces that were randomly arranged to create surfaces with wide range of RR values in order to separate depression storage from infiltration. Other researchers developed their depression storage models adopting this type of surfaces as explained in the manuscript.

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