

## ***Interactive comment on “Soil surface roughness: comparing old and new measuring methods and application in a soil erosion model” by L. M. Thomsen et al.***

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I agree with the Reviewer #1 that the manuscript comparing the various methods determining soil surface roughness is interesting and original. I agree also that the paper is easy to understand. As is the case with all original ideas, it is very difficult to cover all aspects that the reader is interested in knowing.

It is obvious that Reviewer #1 knows more about measurement of surface runoff than I do and I have very little to add. I will address the modeling part of the paper.

It seems that the modeling was an afterthought (nothing wrong with that) and should

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be presented in that way as well. The objective as stated in the paper is as follows:

“The objectives of the study were to obtain a quantitative comparison of the different measurement methods and to quantify the propagation of the differences <in measured roughness> in an erosion model.”

The authors clearly were more successful in the comparison of the different measurement of soil roughness methods than “to quantify the propagation of the differences in an erosion model”. I do not believe as stated in the objective that the authors can claim that they thoroughly examined the effect of the roughness measurements in erosion models. In the manuscript there is one figure with one storm with one model about the outflow discharge of one field somewhere in Norway. So instead of rewriting the whole paper, it would be much simpler to change the objectives and write that the main objective is to test the various measurement methods for surface roughness and an example is given on the effect of these measurement of surface roughness on the surface runoff.

Using the simulation as an example, then the question becomes how much detail should be included. You could refer for the description of the model to the paper of Kværnø, and Stolte and then explain in detail in the example why there were differences in outflow. There would be no need to include the model description in the methodology and the descriptive part of the LISEM model can be included as part of the example. The important part for the reader to know is that LISEM is an infiltration excess model and the detail about how surface roughness is included in the model:

“In LISEM, ponding on the surface is simulated using the concept of Maximum Depositional Storage (MDS, cm). MDS is defined as the threshold value for a given area above which the surface micro-depressions will overflow. When this value is reached in any cell, each additional raindrop will directly result in overland runoff out of the cell”

It is actually interesting that the detailed measurements cannot be included in the model. So what is the need to do these measurements? Maybe because it was never

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possible to do these measurements efficiently, it was not included.

By deemphasizing the modeling part of the paper and addressing the comment of reviewer #1, the paper would be a helpful contribution to the literature.

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Interactive comment on SOIL Discuss., 1, 981, 2014.

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