

## ***Interactive comment on “Application of fuzzy representation of geographic boundary to the soil loss model” by G.-S. Lee and K.-H. Lee***

### **Anonymous Referee #1**

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The paper addresses an interesting approach for making variables to change less abrupt between fields. However, the paper only introduces the concept without fully testing it!

The introduction is not well written (should be completely rewritten!) and additional references should be sought that demonstrate the need for fuzzifying the boundaries of parcels.

Additional information should be given to the model used (RUSSLE): what are the different parameters? Also introduce the full model earlier in the text (equation 15 should in fact be the first equation!).

Why are  $b$  and  $d$  given the same value? What is the effect if these values are chosen differently. How should these values be determined? Can they be derived from field work or should they be optimized through a parameterization procedure?

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From the paper it is not clear how the RUSLE model should be applied when K is fuzzified.

The reasoning for using 500 m as the boundary between which the K-factor is not sufficient. Does this distance depend on the type of soil? or on the tillage? on the topography? This should be made clear. What is the sensitivity of the RUSLE model (soil loss) towards the fuzzifying the boundaries?

The results of the RUSLE model using the original sharp edged field boundaries and the fuzzified boundaries are not tested against field data.

The paper only demonstrates a new technique without a profound analysis. Additional research should be conducted to demonstrate the benefits of this technique compared to what is currently used.

I recommend to reject the paper.

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Interactive comment on Hydrology and Earth System Sciences Discussions, 3, 115, 2006.

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