

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 #2

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I would like to use the questions suggested by the editor for my comments on the manuscript hessd-2005-0108 “Application of fuzzy representation of geographic boundary to the soil loss model” as follows:

- 1) Does the paper address relevant scientific questions within the scope of HESS? Yes, it does. The manuscript presents a fuzzy-based method to represent the possible gradual transition along the boundary of different soil types as an alternative to the sharp-change representation commonly seen in crisp thematic maps.
- 2) Does the paper present novel concepts, ideas, tools, or data? The method is applied to the K factor, soil erodibility, in the erosion model RUSLE (Revised Universal Soil Loss Equation) and then the results of the crisp K are compared with those with fuzzy K at a small watershed scale.
- 3) Are substantial conclusions reached? Unfortunately, the answer is no. By comparing

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results from two simulations without a comparison with field data, the conclusion in the manuscript is meaningless.

4) Are the scientific methods and assumptions valid and clearly outlined? The concept of fuzzifying the K factor in the boundary zone is valid. However the setup of comparing two simulation results is scientifically unsound.

5) Are the results sufficient to support the interpretations and conclusions? Again, unfortunately, the answer is no. Without a solid proof that the new method provides better results than the conventional method, why do people bother to use the proposed method?

6) Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Barely. It might be due to language problem.

7) Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Insufficient. The fuzzy concept has been applied to the RUSLE model in various papers in the last ten years. Although their context might be different from those in this manuscript, those studies should be cited and discussed.

8) Does the title clearly reflect the contents of the paper? Yes. 9) Does the abstract provide a concise and complete summary? No. Again, it might be a language problem.

10) Is the overall presentation well structured and clear? No, it is not. For example, the description of the RUSLE model is organized poorly.

11) Is the language fluent and precise? No. the authors need to get assistance from a professional editor for a revised version of the manuscript.

12) Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Yes.

13) Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced,

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combined, or eliminated? The whole manuscript should be rewritten with professional editing.

14) Are the number and quality of references appropriate? More references on the application of fuzzy to RUSLE are needed.

15) Is the amount and quality of supplementary material appropriate? Yes.

With all due respect to the authors, I do not think the manuscript can be accepted in the current version. At least, a major revision is needed. Furthermore, unless a comparison between simulation results and field data is added, the manuscript remains scientifically invalid.

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

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