Hydrol. Earth Syst. Sci. Discuss., 6, C333–C334, 2009
www.hydrol-earth-syst-sci-discuss.net/6/C333/2009/

Hydrology and Earth System Sciences Discussions

Interactive comment on "Simulation and validation of subsurface lateral flow paths in an agricultural landscape" *by* Q. Zhu and H. S. Lin

Anonymous Referee #1

Received and published: 16 April 2009

General comments This is an interesting manuscript with focus on identification of subsurface lateral flow paths in agricultural landscapes. Three different validation methods were used to evaluate the results of flow pathways calculations. Detailed soil and field surveys are the strengths of this study. I suggest publishing this manuscript with consideration taken to comments below.

Specific comments However I feel that the manuscript can be improved if following comments are taken into consideration: 1. Authors state that "the topography of the three interfaces was dominated by the variation in land surface elevation, resulting in nearly identical spatial patterns in the simulated lateral flow paths among the three interfaces. " (page 2906, line 4-7). I found it then difficult to understand why the land surface elevation itself was not used as one interface to simulate subsurface flow paths, at least

to study to what degree the other interfaces improve these calculations. So I would suggest including this "control" interface. 2. I would appreciate some discussion on differences between results received with different interfaces and validation methods, and maybe even suggestions by the authors regarding selection of the appropriate method (interface) and validation technique when scaling-up their results. 3. The interpolation of point data may influence the final results. Authors write that different methods were used to interpolate different variables (page 2899, lines 6-16), and refer to in-review article (Zhu and Lin, 2009). This leaves small possibilities to evaluate the quality of performed interpolation. 4. I would appreciate little more information on chosen validation methods already in the introduction. For instance text on page 2909, from line 23 could be moved to introduction 5. Consider omitting Fig 2, it is more or less common knowledge by now and references will be enough. 6. Figure 8 may also be omitted, it is not the essential part of the manuscript. It is also referred to in the text before Fig 7.

Technical corrections 1. Figure 11. Figure text – what is the last sentence here referring to?

Please also note the Supplement to this comment.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 2893, 2009.