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Hydrology and Earth System Sciences
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Discussions

Interactive comment on "Should we use a simple or complex model for moisture recycling and atmospheric moisture tracking?" *by* R. J. van der Ent et al.

Anonymous Referee #2

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The paper compares three atmospheric moisture tracking methods of differing complexity. Comparisons are made using the Lake Volta region in West Africa as a case study. The models are found to be sensitive to the vertical resolution of the model because of the strong wind shear in the region. Modifications to the different model setups are suggested to improve model performance. The paper is generally well written and suitable for publication in HESS after the following minor issues have been accounted for.

Minor comments

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Page 6728. A more detailed description of the three models used in this study would be useful.

P6733. It would be useful to make a quantitative comparison of precipitation between the different models and setups. The current figures only allow a qualitative comparison of the patterns and not a quantitative comparison of amounts.

Page 6733. The movies are a useful addition to the paper. However, many readers of the manuscript may not download and watch the movies. Furthermore, comparisons between two different movies is challenging. For these reasons, I would encourage the authors to devise methods of visualising (and quantifying) the important results that do not rely on access to the movie files (e.g., as a summary table or as an additional figure).

Page 6374, L26. Please clarify the release height in the standard 3D-T model.

P6738, L15. What is meant by a “satisfying degree of similarity”?

Table 1. It is not clear what -, ++ and 0 refer to with respect to computation speed. Also the meaning of “Back-tracking possible” is also not clear. Please clarify.

Table 2. How are categories of the pattern (exact, good, reasonable, bad) determined? This comparison is very qualitative and would be improved through a more robust, quantitative comparison of the patterns.

Table 3. The meaning of ++, +, -, 0 are not clear.

Figure 3-8. It might help readability of the paper if these figures were presented as different panels of the same figure and all presented on the same page. Currently, comparison between the different model runs is challenging for the reader.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 6723, 2013.