

Interactive comment on “Transient flow between aquifers and surface water: analytically derived field-scale hydraulic heads and fluxes” by G. H. de Rooij

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Received and published: 21 November 2011

The author presents a set of analytical solutions for the flow in thin aquifers under different recharge scenarios. Although I checked only parts of the mathematics, I am convinced that the paper is technically sound, and it is in principle well-written.

However, I have a problem with the overall goals of the paper. It seems to me like putting a toolbox somewhere and hoping that anyone will find it and make use of it. There are very few “immediate” results that could be stated in a few sentences. Concerning the toolbox itself the problem is that all these scenarios could in principle be

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treated by numerical groundwater models, too, and I am sure that this will be easier for the majority of the scientists in this field. Furthermore, heterogeneity can be considered in these numerical models. Personally I am not a friend of putting everything into big numerical models, and I like theoretical studies like the one presented here. However, I am not convinced that the majority of the readers of HESS will appreciate the work done.

In sum, it is very difficult for me to make an overall assessment. The paper would do very well as a chapter in an advanced textbook on groundwater modeling or as a (very long) technical note. However, I am not sure whether the results in the “classical sense” justify the publication as a regular paper in a scientific journal.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 8435, 2011.

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