Hydrology and Earth System Sciences Discussions

Interactive comment on "**Identifying a soil hydraulic parameterisation from on-ground GPR time lapse measurements of a pumping experiment**" *by* A. Dagenbach et al.

Anonymous Referee #2

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The article is mostly clearly and well written though I have some suggestions to make some of the system descriptions easier to follow. There are two systems, the physical model where the GPR was carried out, and the numerical model, used to describe the water content profile and to model the GPR signals. In the physical model there is some inconsistency in description of the depth; Fig.1 shows 180 cm, while text says 1.9 m. First of all use m rather than cm. Also there is a mix of depth and height which is unnecessary, a compaction layer is described at 110 cm depth and at 0.7 m height – use the same reference positions (either top or bottom consistently). In '2 Experimental setup' was the initial water content above the groundwater level at 47 cm measured,

and in which case what was it? Specify in line 23 that entire area was supplied with this amount of water, adding infiltration rate as mm/h or similar would also be useful for easier comparison with other experiments. In '5 Numerical simulations' a stationary water content profile was calculated for a 2m deep profile, why not the same as for the physical system? Likewise for the model domain used for the GPR simulations? Or at least explain why not the same. In Figs 2 and 3 I suggest including depth/height references.

Text edit suggestions; p. 9097, line 16:GPR is a powerful non-invasive measurement instrument. It is already widely used as a method to investigate... p. 9097, line 22: Choosing a different way, van der Kruk et al. (2010) demonstrated...

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 9095, 2012.