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Hydrology and Earth System Sciences Discussions

Interactive comment on "Examining the effect of pore size distribution and shape on flow through unsaturated peat using 3-D computed tomography" *by* F. Rezanezhad et al.

Anonymous Referee #1

Received and published: 15 July 2009

Review of "Examining the effect of pore size distribution and shape on flow through unsaturated peat using 3-D computed tomography"

General Comments The manuscript shares an interesting use of computed tomography to quantify pore sizes and morphology throughout peat samples to determine parameters used in estimation of hydraulic conductivity with adapted Hazen and Kozeny-Carman equations. The work is very novel and interesting and appropriate for the Hydrology and Earth Sciences Journal. The manuscript is very well written and should be published.

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Discussion Paper

Specific Comments The authors should consider the following suggestions.

Recommend that the authors consider the following article in their paper.

Anderson, S.H., H. Wang, R.L. Peyton, and C.J. Gantzer. 2003. Estimation of porosity and hydraulic conductivity from x-ray CT-measured solute breakthrough. In F. Mees, R. Swennen, M. Van Geet, & P. Jacobs (eds.) Applications of X-ray Computed Tomography in the Geosciences. Geological Society of London. Special Publication 215:135-149.

Page 3861 Figure 3 – Recommend using a log-scale for the hydraulic conductivity axis to better detect deviations at low tension.

Page 3862 Figure 4 – Recommend using lower case 'r' for coefficient of determination since it is not multiple regression. When looking at the graph, it appears that the value of '0.99' appears to be a bit high since there are some deviations from the line; please check this. In addition, the use of 'log' for the axis labels is unnecessary since the axes are log-scaled.

Technical Corrections

Page 3839 Line 1: Delete comma after "sections."

Page 3841 Line 21: Need space between units for Q.

Page 3842 Line 20: Delete extra comma.

Page 3848 Line 9: "Pore" should all be in lower-case letters.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 3835, 2009.