

Interactive comment on “Parameterization of bucket models for soil-vegetation-atmosphere modeling under seasonal climatic regimes” by N. Romano et al.

Anonymous Referee #1

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This is a valuable contribution to the already extensive literature on simple soil moisture models. My main criticisms regard 1) the use of a simple Poisson process for rainfall in seasonal conditions 2) the use of Richards equation as the absolute truth, and 3) the lack of reference to some previous works on bucket (or vertically averaged) soil moisture models.

It may very well be that in some cases with macroporosity and specific root distributions, simple bucket models may be closer to reality than some parametrizations of the Richards equation. An extensive comparison with real data could be valuable in this

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respect.

Previous models and analysis of bucket models: the model by Guswa stems from the model of Laio et al. 2001, which is in turn a modification of Rodriguez-Iturbe et al. PRSA (1999).

Previously the paper by Milly, WRR 1993 solved analytically and model and used it to investigate Budyko's curve. Porporato et al. American Naturalist (2004), improved this model.

The authors should also consult the paper by Rigby and Porporato HESS 2006, which deals with infiltration modeling in bucket models.

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