

Interactive comment on “Socio-hydrology from the bottom up: A template for agent-based modeling in irrigation systems” by Dimitrios Bouziotas and Maurits Ertsen

Anonymous Referee #2

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The title of the manuscript reminded me of the famous book by Epstein and Axtell (1998): ‘Growing Artificial Societies: Social Science from the Bottom Up’. To my surprise, no reference was made to this relevant work. Even more surprisingly, the manuscript does not provide an adequate literature review on the considerable amount of literature on empirical agent-based or geo-simulation models from the fields of land-use change, water resources management and the modelling of complex socio-ecological systems in general (eg. An 2012; Torrens 2010; Filatova et al. 2013).

However, my main concern is that the paper is not focused. The objective of the study is not well described. What are the emergent phenomena that you wanted to study? The objective as described in the Discussion section (p12 line 8:‘...to explore the essential

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elements of agent-based modelling in a simple socio-ecological context...') was not well addressed by the manuscript.

Model description is poor. I think that an ODD description (Grimm et al., 2010) would have helped here. The model is also not available on OpenABM (www.openabm.org). This would allow reviewers, and others interested, to have a look at the model.

From what is presented with regard to the model I learned that it is not related to any empirical case-study and the comparisons between the 'real game' and the model are not very informative either. I found the text in the Discussion and Conclusions sections on validation and 'proof of concept' therefore not convincing.

References An, L. (2012). Modeling human decisions in coupled human and natural systems: Review of agent-based models. *Ecological Modelling*, 229, 25-36 Filatova, T., Verburg, P. H., Parker, D. C., & Stannard, C. A. (2013). Spatial agent-based models for socio-ecological systems: Challenges and prospects. *Environmental Modelling and Software*, 45, 1-7 Grimm, V., Berger, U., DeAngelis, D. L., Polhill, J. G., Giske, J., & Railsback, S. F. (2010). The ODD protocol: A review and first update. *Ecological Modelling*, 221(23), 2760-2768 Torrens, P. M. (2010). Agent-based Models and the Spatial Sciences. *Geography Compass*, 4(5), 428-448

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