

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 #4

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The manuscript by Bouziotas and Ertsen presents a simple agent-based model for applications in irrigation systems. The authors state that the objective of this manuscript is to provide a proof of concept of the applicability of such approaches to the specific case of irrigation management.

The topic is definitely of interest for the HESS readership. Yet, the manuscript lacks of focus and, under a certain point of view, does not deliver what it promises. All in all it reads more as a book chapter than as a research paper. In particular, the novelty of the approach with respect to the existing Irrigation Management Game remains unclear – in several occasions, the authors write ‘as in the original version of IMG’. The authors refer to the ‘agent perspective’ (P 2, L20), but it eluded me how this perspective is really

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included in the model (particularly considering that all the agents in the model behave in the same way in the model application presented here). The results are somewhat expected given the rules of the game (upstream farmers have more choices and hence end up preferring more valuable crops, with positive effects on their incomes). I would also like to point out that several points are made regarding possible future works and analyses based on the proposed approach, not only in the discussion but also when presenting the approach. Taking up at least some of them could be a way to enhance the impact of this work and also to make it more focused on specific issues, should some issues be chosen to explore a specific problem or set of problems. There are several references to 'real irrigation systems', yet none of these aspects are explored.

Several sections could be significantly shortened without reducing the information content (Section 2.1 for example) and there are several concepts reiterated in the manuscript. At the same time, some parts need more explanations. Examples are i) the different roles of Manager and Gate Controller, which is not immediately obvious; ii) what is meant with $m=3$ on P5 or 'threshold of farmers' on P6 L3; iii) the physical or physiological meaning of 'good' or 'medium' conditions on P8.

Minor comments: - Not all the references cited in the text are reported in the reference list.

- It should be clear already at the beginning of section 2.3 there will be three cases explored.

- Why are all agents refer to as males?

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