

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 #3

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The paper is on the presentation of a “signal-based” instead of a “process-based” agent-based modeling framework for “the existing Irrigation Management Game”.

Main issue:

The discussion needs some links to the findings of the previous studies of IMG. For instance are the stylized facts in Figure 5 (amount of soya depends on the position along the river) consistent with the previous findings of IMG. The boxplots of figure 6 are meaningless if not compared with previous IMG studies. How should the ms provide a proof of concept if model outcomes are not compared with the original game? How sensitive are the findings to changes in the parameters?

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Overall I like the study but the presentation of the “concept of proof” of the framework to capture key elements of the IMG is immature at this stage. I think it will be crucial to identify stylized facts or patterns from the IMG literature and reproduce them with the ABM.

Minor comments:

Personally I think the Modelling Philosophy paragraph does not add much to the ms and distracts the reader.

The paragraph 2.2 on “the basis” of the irrigation game is important. The work by Marco Janssen is only cited in the text, but has not made it in the reference list (e.g. Janssen et al. 2012, Janssen et al. 2013, . . .). The authors should also consider Perez et al. 2016, Global Environmental Change – Human Policy Dimensions. Figure 1 is a snapshot from the original publication? It is almost unreadable and should be replaced by a more informative and aggregated graphical visualization that more easily explains the setup.

Paragraph 2.3: “Intra-farmer interactions” -> “Inter-farmer interactions” Personally I am not overly convinced by the combinatorial arguments for the game simplification. The research questions and the context should be more important of course it has to remain computational feasible. But why not reducing the number of players? Fig. 3 could be skipped.

Paragraph 3.1 is out of place it needs to go before analysis.

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