Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2020-272-RC1, 2020

Hydrology and Earth System Sciences
Discussions
Open Access
EGU

Interactive comment on "The role of household adaptation measures to reduce vulnerability to flooding: a coupled agent-based and flood modelling approach" *by* Yared Abayneh Abebe et al.

Anonymous Referee #1

Received and published: 19 August 2020

This manuscript presents an agent-based model (ABM) to examine the role of household adaptation measures in flood risk management (FRM). The research gaps addressed are the inclusion of changes in household behaviour over time and the inclusion economic incentives [line 43]. The stated practical purpose of the model is to inform authorities and communities of the benefits of household adaption measures [l. 440]. The ABM considers threat appraisal (flood experience, perception of climate change) and coping appraisal (e.g. household income, social networks), which determine, through a decision rule table, whether measures will be implemented.

Printer-friendly version

Discussion paper

The paper is well written and of interest given the potential of household adaptation measures to help in reducing economic damage under a future potentially more variable climate. The authors should be commended for providing the model, data sets and documentation via github.

A number of sensitivity analyses are performed by modifying given parameters that were initially based on expert opinion [Table 2; Figs 8-12]. The rank of the results, in terms of adaptation uptake and building losses, are broadly as expected given the direction and magnitude of a parameter change. For example, implementation of measures is primarily driven by flood experience, and subsequently delaying implementation makes a community less prepared for the next event [Fig 12]. Considering the results, could the authors comment on the benefits of using the sophisticated ABM approach compared to simpler methods? The challenge is going from sensitivity studies to scenarios. For example, it would be of interest to explore proactive, rather than reactive strategies, examining the role of media on the uptake of measures to inform policy (although this goes beyond the current research).

Minor comments

Figure 7: I can only see 5 lines on this figure (either scenario 1 or 6 is missing or they overlap – it is difficult to differentiate between the colours). Also, it would be expected that there would be a jump in measures implementation following a flood; why is there no jump in year 2 for scenario 2?

Line 331: I do not understand the sentence starting “An important aspect. . .”.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-272, 2020.

Printer-friendly version

Discussion paper