Natural Hazards and Earth System Sciences Discussions

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/nhess-2021-370-RC1, 2022
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# Comment on nhess-2021-370

Erick Mas (Referee)

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Referee comment on "An interdisciplinary agent-based evacuation model: integrating the natural environment, built environment, and social system for community preparedness and resilience" by Chen Chen et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-370-RC1, 2022

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This is a well-written and easy-to-understand paper, however, with limited novelty and contribution, at least from the way it is presented.
The main contribution flagged by the authors is the use of 'empirical data' to feed agent behaviors in the model. I found that using local evacuation expectations surveys is not a new approach, so I consider the gap is not being filled here.
In contrast, evacuation drill data can be an essential source to elucidate evacuee behavior, however in some cases also inaccurate compared to the actual behavior in an emergency.
It is not clear how the evacuation drill data is leveraged in the study. Only travel speed is adjusted based on the data gathered from the drill, and a modified hiking function is proposed. Changing the hiking function with empirical data from the drill is understandable. Still, the applicability of such a function holds the same uncertainty as the original function since both come from physical experiments and not from a real tsunami situation.
I think the authors should not stress the use of evacuation drill data (empirical data) as a novelty since this is another non-emergency-related behavior, and its superiority compared to standard physical experiments cannot be proved.
On the other hand, site-specific analysis becomes helpful in a particular area. The authors have made an excellent effort to explore the effect of walking speeds on mortality rate.
Overall the manuscript can be considered a valuable resource for Coos Bay authorities, though very limited in scientific advancement in the field.
Authors can find further comments in the attached document.

Please also note the supplement to this comment:
https://nhess.copernicus.org/preprints/nhess-2021-370/nhess-2021-370-RC1-supplement.pdf