

Interactive comment on “Modelling the high-resolution dynamic exposure to flood in city-region” by Xuehong Zhu et al.

Anonymous Referee #1

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This study builds an integrated model to simulate dynamic exposure to floods in urban areas during flood events. The model is applied in a real-world case study area for demonstrating its usefulness. In general, the work is interesting and has potential from both theoretical analysis and engineering implementation perspectives. However, there are some confusing and unclear parts in the paper that need further explanation or clarification. Below are some specific comments.

1. The modeling results (e.g., in lines 17-21) are very usual. They can even be obtained from intuitive reasoning, without building the complicated model as presented in this paper. I would suggest the authors present the modeling results that could really support the unique contribution of this paper (e.g., high resolution, dynamics exposure), especially those that cannot be obtained without high resolution model. Otherwise, we

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cannot see the benefit of building such model.

2. Line 39, the term “disaster-pregnant environment” is rarely used in English scientific publications. Please change it to some commonly used term. It would be better to let some native English speakers proof read the paper before resubmission.

3. Lines 46-47, what is “index method”? Please provide some details.

4. The daily routine is generated from survey. But the paper does not provide an introduction to the survey itself, such as how many people participated in the survey, the responders’ age distribution and professions, etc. Please add some text to detail the survey in the paper.

5. Section 3.2 reviews ABM in detail. The paragraph seems to be better fit in “introduction” section, instead of methodology section.

6. Line 211, classification of activities is confusing. What is the difference between leisure, recreation, and rest? Are there any literatures to justify this classification?

7. Figure 4 emphasizes the daily routines for unemployed woman. Why these unemployed women go to school to drop children off?

8. The paper never mentioned the daily routine for unemployed man and employed person. However, it might be more important to talk about employed person, than unemployed women as in Figure 4.

9. Please provide some introduction how the probability of agents’ daily activities is generated (e.g., Figure 4).

10. For agents’ route choices (start from line 232), minimizing travel time does not mean the agents will choose the shortest path, because too many people choosing the same path might cause traffic jam. In addition, travel time also depend on number of driving ways on road and traffic condition.

11. Figure 8 lists some daily scenarios and disaster scenarios. They are confusing.

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For example, scenarios 2, 5, 8, 11, 14 and 17 are all about traveling by car. Are there any differences? If they are different, then what are the differences? If not, why they are classified as different scenarios?

12. I do not see how you model agents' moving process on road. Are there any traffic models to simulate this process? How do you simulate the agents' moving from one place to another during floods?

13. The first part of "Results" section, subsection 4.1, introduces model implementation and parameter setting. However, this subsection seems to fit better in methodology section since they are not related to modeling results.

14. Section 4.5 Validation is very confusing. Usually model validation appears in the first section of modeling results, to tell readers that the model/method has been calibrated and is reliable. I am not sure why the authors put it at the end of results section. Please explain this arrangement.

15. The results section simply introduces the modeling results, without telling us the insights. In other words, what information we can obtain after reading your figures/data? Can the results justify your claiming of the contribution of this paper?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-590>, 2018.