Comment on nhess-2021-200

Anonymous Referee #1

Referee comment on "Multi-scenario urban flood risk assessment by integrating future land use change models and hydrodynamic models" by Qinke Sun et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-200-RC1, 2021

Dear authors,

Thank you for letting me read the interesting manuscript that provides valuable results on urban flood risk scenarios for Shanghai. The manuscript fits the aims and scope of the Journal Natural Hazards and Earth System Sciences. The authors present their method and data transparently as well as provide a good presentation of the results. However, the manuscript lacks a general discussion of studies on urban flood risk assessment and a link of their findings to the literature. Therefore, I recommend the authors to add this to the manuscript. Also, I suggest a external language check. The manuscript includes some grammar mistakes. Next to smaller remarks I therefore recommend a major revision.

Minor recommendations:

Please do not use abbreviations, such GE or BU in the abstract.

Please rephrase: „We also find that urban will tend to expand to areas vulnerable.." What is meant by urban? Urbanization?

What is meant by „coupling model" (line 24)?

Lines 31-32: „The United Nations reports that the global population will increase by 29% (7.6 billion) between 2017 and 2050 (United Nations, 2017b)," Is the increase taking

place in coastal cities? If yes, please make this clear in the sentence.

Line 44: Please give some examples what is meant by „environmental factors"

Line 54: „The FLUS model improves the simulation accuracy of the model…" Which model will be improved?

Please rephrase: „To answer this question, we first consider how urban grow under different environmental and planning factors in the future. (lines 61-62)

Please include a presentation of the further content of the paper in the Introduction.

Line 149-150: Can you please further explain why do you choose 2,768 km2 in 2030 and 3,200 km2 in 2050 as reasonable city growth pathways?

Line 169-170: Please add some references to justify the useful applicability of the LISFLOOD-FP model.

Line 187: Please explain what is meant by the abbreviation LUCC.

I propose to include the explanations contained in the titles of the figures and tables in the text of the manuscript and to refer to the figures and tables.

Lines 250-253: I suggest presenting either relative numbers (in %) or the absolute number of inundated land area. For RCP2.6 scenario you are using the land area but for RCP 8.5 you present relative numbers.

Line 260-261: Please make clear whether this findings means in absolute and/or in relative numbers.

Line 329: „…range and spatial distribution of flood risk in future urban" Please add „areas" at the end of the sentence.