

Interactive comment on “Scenario-based inundation analysis of metro systems: a case study in Shanghai” by Hai-Min Lyu et al.

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Received and published: 4 April 2019

Review Comments Title of Paper: Scenario-based inundation analysis of metro systems: a case study in Shanghai

Manuscript Number: hess-2019-28

This article proposed an approach to investigate the flood risk to metro system. This is an interesting topic for urban management to improve flood resilience of significant infrastructure. To achieve the objective, the metro system of Shanghai is studied. The authors have used SWMM software to simulate the scenario and developed an algorithm to calculate the inundation depth. The results are very useful for the metro management and decision-making for municipal government. However, the following

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weak points have to be addressed.

GENERAL COMMENTS: - The equations have to be clearly referenced. - A brief summary of the simulated scenario should be added to the introduction. - It seems that some repeat information is provided in section to make it lengthy otherwise. SECTION 2.2 - value of r is taken as 0.45. how is this value determined? - Type of soil in the study area should also be added so as to get a clear image of the study site. This is an important point missed. - Do assumptions made in methodology are validated for a similar type of work at another site also? SECTION 3.1.2 - Description showing the that calculation of width and area should be included. SECTION 3.2 - Step 4 in the flowchart of figure 3(b), needs to be clarified. - In Result and Analysis: If using abbreviation anywhere, its full form needs to be stated at first. - In discussion: Bit more flooding prevention measures and tips should be added in this section. Does the type of soil have any effect on inundation depth? - Details about 50 years rainfall intensity and 100 years rainfall intensity should also be included in conclusion as the whole manuscript covers 50, 100 and 500 years rainfall intensity. The following publications may be useful for this article: - An enhanced inundation method for urban flood hazard mapping at the large catchment scale. *Journal of Hydrology*, 2019, 571: 873-882. - The effectiveness of low-impact development for urban inundation risk mitigation under different scenarios: a case study in Shenzhen, China. *Natural Hazards and Earth System Science*, 18, 2525–2536, 2018, <https://doi.org/10.5194/nhess-18-2525-2018> - Modelling urban floods and drainage using SWMM and MIKE URBAN: a case study. *Natural Hazards*, 2016, 84(2): 749-776. - Urbanization and climate change impacts on future urban flooding in Can Tho city, Vietnam. *Hydrology and Earth System Science*, 17, 379-394, 2013, <https://doi.org/10.5194/hess-17-379-2013>

Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/hess-2019-28>, 2019.

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