Urban growth and spatial segregation increase disaster risk: Lessons learned from the 2023 disaster on the North Coast of São Paulo, Brazil

Cassiano Bastos Moroz, Annegret H. Thieken[1]

Response letter to public comment (Lorraine Trento Oliveira)

Response 1: *We would like to thank Lorraine Trento Oliveira for the review of our paper, and for the positive comments about our research. We will certainly benefit from these suggestions and consider them when working on the final version of the paper. Please, find attached our point-by-point responses (in italics). Apart from these main comments, we also carefully evaluated the specific comments along the manuscript file.*

Public comment: This paper shows important evidence of hazard exposure in secondary LMIC cities and shed light in the disparities on the level of exposure and vulnerability of low-income neighborhoods. It adds to the body of knowledge with the spatial and temporal analysis of urban growth and the influences to disaster risk.

The manuscript can have minor revisions: (1) the introduction would benefit from more literature review on urban growth (spatially explicit) factors as well as a methodological flowchart figure;

Response 2: *We agree that the manuscript can benefit a lot from a more complete literature review on urban growth. We will complement this in the revised version of our paper. Unfortunately, we opted to not include a methodological flowchart due to the maximum length of the journal. However, we will carefully evaluate the methodology to make it clearer and easily understandable for the reader.*

(2) more details on the processing and analysis should be provided e.g. choice of cell size, intersection of FUC´s shapefile with WSF layer, handling of collinearity of factors etc;

Response 3: *Thanks you for this comment. We will consider this in the revised version, and will include as much details as possible in the methodology section. However, we opted to not address the collinearity of factors because this study does not involve any modelling (e.g. via logistic regression). Our analysis is solely exploratory, thus a potential collinearity of factors does not influence our results.*

(3) future research should use this as baseline for prediction on exposure of the same study area, considering different land use change scenarios, as well as the inclusion of more contextual factors (such as distance to CBD).

Response 4: *We agree that the inclusion of more contextual factors is of great importance for future research, in special from a modelling perspective. We are currently working on the development of modelling approaches to simulate scenarios of urban growth and spatial segregation in the region. We will certainly consider other contextural factors in this following stage of our research.*

Response 5: *Once again, thank you very much for your time to review the paper.*