Modelling the vulnerability of urban settings to WUI fires in Chile.

Authors: Paula Aguirre, Jorge León, Constanza González-Mathiesen, Randy Román,Manuela Penas, Alonso Ogueda

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Responses to Comments from Referee Nº2.

We thank the referee for his revision, and have pondered his general comments. We'd like to note however that the PDF file submitted has highlighted paragraphs but does not include specific notes or comments, so we were unfortunately unable to respond to more specific concerns or suggestions you may have.

In the following response, we address each of your comments, identifying referee comments as "RC", and authors' comments as "AC".

RC: The manuscript lacks novelty and originality. Novelty is the primary criterion that a manuscript should have in order to be published to a scientific journal. The specific manuscript is not presenting anything new except for conventional methods.

AC:
We do believe that our paper contributes to an emerging field of research in wildfire risk reduction in WUI areas, which is the quantitative assessment (based on statistical analyses of post-disaster surveys) of detailed-scale physical characteristics of settlements and structures, and how these features contribute to the probability of loss. As authors like Dossi et al. (2022) and Papathoma-Köhle et al. (2022) point out, there is a lack of studies focusing on this topic. Moreover, we propose a sample size of 6,061 built units (collected across seven case studies and three years of work), significantly larger than most of the studies currently available in the literature. Also, unlike several articles that focus on one or two types of physical variables, we assess three types of them: those that characterize the built unit itself, those that address the relationship between this built unit and its immediate surroundings, and those that examine the location of the built unit in its larger neighbourhood context. Finally, it is worth pointing out that we deliver the first study of this type for Latin America and Chile, an area that is expected to be severely affected by climate change in the following, one of which consequences will be more frequent and severe wildfires.
To make the novelty and contributions of our paper more clear to the reader, we have reworded and improved part of section 1.4.

RC:

The introduction should be more updated in the probabilistic assessment of vulnerability (see the references below).

AC:

Unfortunately the references suggested by the referee were not attached to his post, but we have taken into account his request to update the discussion of probabilistic vulnerability, and we do agree that some relevant works had been missed in our original version, in specific:

Caggiano, Michael D., Todd J. Hawbaker, Benjamin M. Gannon, and Chad M. Hoffman. 2020. "Building Loss in WUI Disasters: Evaluating the Core Components of the Wildland–Urban Interface Definition." *Fire* 3 (4): 73. https://doi.org/10.3390/fire3040073.

Calkin, D., O. Owen Price, and M. Salis. 2019. "WUI Risk Assessment at the Landscape Level." In *Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires*, edited by Samuel L. Manzello, 1184–95. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-52090-2.

Goldammer, Johann, Ioannis Mitsopoulos, Giorgos Mallinis, and Martine Woolf. 2017. "Words into Action Guidelines: National Disaster Risk Assessment Hazard Specific Risk Assessment 6. Wildfire Hazard and Risk Assessment." https://www.undrr.org/publication/wildfire-hazard-and-risk-assessment.

Mitsopoulos, Ioannis, Giorgos Mallinis, and Margarita Arianoutsou. 2015. "Wildfire Risk Assessment in a Typical Mediterranean Wildland–Urban Interface of Greece." *Environmental Management* 55 (4): 900–915. https://doi.org/10.1007/s00267-014-0432-6.

Oom, D., D. de Rigo, H. Pfeiffer, A. Branco, D. Ferrari, R. Grecchi, T. Artés-Vivanco, et al. 2022. "Pan-European Wildfire Risk Assessment." Luxembourg. https://doi.org/10.2760/9429.

Sakellariou, Stavros, Athanassios Sfougaris, Olga Christopoulou, and Stergios Tampekis. 2022. "Integrated Wildfire Risk Assessment of Natural and Anthropogenic Ecosystems Based on Simulation Modeling and Remotely Sensed Data Fusion." *International Journal of Disaster Risk Reduction* 78 (August): 103129. https://doi.org/10.1016/j.ijdrr.2022.103129.

San-Miguel-Ayanz, J., E. Chuvieco, J. Handmer, A. Moffat, C. Montiel-Molina, L. Sandahl, and D. Viegas. 2017. "Climatological Risk: Wildfires." In *Science for Disaster Risk Management 2017: Knowing Better and Losing Less*, edited by K. Poljanšek, M. Marín Ferrer, and T. Clark, I. De Groeve, 294–305. Publications Office of the European Union. https://purl.org/INRMM-MiD/c-14445352.

Tampekis, Stergios, Stavros Sakellariou, Palaiologos Palaiologou, Garyfallos Arabatzis, Apostolos Kantartzis, Chrisovalantis Malesios, Anastasia Stergiadou, Dimitrios Fafalis, and Evangelos Tsiaras. 2023. "Building Wildland–Urban Interface Zone Resilience through Performance-Based Wildfire Engineering. A Holistic Theoretical Framework." *Euro-Mediterranean Journal for Environmental Integration* 8 (3): 675–89. https://doi.org/10.1007/s41207-023-00385-z.

Zong, Xuezheng, Xiaorui Tian, and Lei Fang. 2022. "Assessing Wildfire Risk and Mitigation Strategies in Qipanshan, China." *International Journal of Disaster Risk Reduction* 80 (October): 103237. https://doi.org/10.1016/j.ijdrr.2022.103237.

A critic revisit our of introduction, as well as some suggestions for Referee Nº1, lead us to rewrite paragraphs in section 1.2.