

Response to referee #2

Overall, the manuscript is well written and technically sound, addressing an important and timely topic on the integration and evaluation of physics-based earthquake simulators within a PSHA framework. The methodology is rigorous, the workflow is clearly designed, and the consistency tests against both macroseismic and instrumental observations are carefully implemented, making the study suitable for publication after revision. That said, the introduction would benefit from a clearer hierarchical structure and stronger logical progression, particularly by more explicitly distinguishing the limitations of traditional PSHA, the advantages of physics-based approaches, and the specific scientific gap this work fills, as well as by summarizing the main objectives and novel contributions more concisely toward the end of the section. In addition, while the discussion is generally solid, its depth and breadth could be further enhanced by providing a more integrative synthesis of the results, clarifying the broader implications for seismic hazard practice in low-to-moderate strain regions, and more explicitly discussing the transferability of the proposed workflow to other tectonic settings and its role within future hybrid or logic-tree PSHA frameworks. Addressing these points would improve the clarity, balance, and overall impact of the manuscript without requiring major changes to the core analysis or results.

We thank the reviewer for the positive feedback given to our article, as well as for the suggestions made. In the revised version of the manuscript, we will:

- 1) Improve the introduction according to the suggestions, clearly distinguishing the limitations of classical PSHA and the potential solutions that physics-based models can offer. We will place this in the context of our study by clearly stating the objectives and the potential impact that our work might have at the EBSZ and other low-strain regions worldwide.
- 2) Improve the discussion in section 4.4. to accommodate the suggestion made by the reviewer.