

**Review of:** Regional county-level housing inventory predictions and the effects on hurricane risk (nhess-2021-335)

**General Comments:**

Overall, I enjoyed the manuscript and think the work is very solid. I am especially appreciative of the well-written manuscript and great figures/tables. The technical discussion of their model and results is also very good. The manuscript does suffer a bit when it comes to the background and literature, though. The authors do this great work but gloss over many prior studies that have asked similar questions. Below I make several recommendations to improve the reach of this manuscript and help place it in the context of existing studies that have looked at similar issues.

**Recommendation:** Revisions Requested

**Specific Comments:**

- This research describes the plethora of studies centered on “Expanding Bull’s-Eye Effect” (See: <https://chubasco.niu.edu/ebe.htm>) As such, there needs to be discussion included on how this manuscript furthers the knowledge related to hazard exposure changes over time. I encourage the authors to examine these manuscripts, especially Freeman and Ashley (2017), for additional studies (e.g., works by Preston et al.) to support their findings. Recommend including in Section 2.3

- Line 115: This is not true. Most of these studies that have used SERGoM and ICLUS have their housing unit projections controlled by historical (or climate change storyline projections) county-level enumerations of housing unit growth rates. This reasoning is weak and built on a shaky foundation, at best. For instance, Freeman and Ashley (2017) examined multiple states and metro areas (made up of multiple counties).

- There needs to be more discussion on how the housing growth models used herein differ compared to other methods (e.g., dasymetric). Is the method presented herein “better”, or is it just “different”? Either way, more discussion is needed beyond ML and CNN models (Section 2.1)

- Section 4.1: Why was an OLS regression used over other counterparts. There needs to be at least some discussion on it’s benefits and reason for selection.

- The results section could be cut down a bit for brevity. I like the technical discussions but think it could be condensed quite a bit or moved into supplemental material. My reasoning for bringing this up is so that they can add a section in the discussion portion of the manuscript that allows them to compare their results against others. This provides context and potential areas of future improvement. It also may highlight where the author’s methods are superior.

**Technical Corrections:**

- Recommend removing paragraphs and sentences that start with “Table X shows...” Figure Y illustrates...” etc. For example, line 121-124 is is caption material, not text material. Parenthetical referencing will remove the “fluff” from the text and help the manuscript flow much better.

- Line 145: Already defined acronyms/initializations prior.