

Geosci. Model Dev. Discuss., referee comment RC2  
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## Comment on gmd-2021-437

Nadia Bloemendaal (Referee)

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Referee comment on "Uncertainty and sensitivity analysis for probabilistic weather and climate-risk modelling: an implementation in CLIMADA v.3.1.0" by Chahan M. Kropf et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-437-RC2>, 2022

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In their manuscript "Uncertainty and sensitivity analysis for probabilistic weather and climate risk modeling: an implementation in CLIMADA v.3.1.0", Kropf et al present a new module to the climate risk modeling platform CLIMADA. This module is designed specifically to calculate global-scale uncertainty and sensitivity analyses related to various natural hazards and impacts. I can foresee that this new functionality will be of interest to a broad range of CLIMADA and catastrophe model users, and that this new feature will be on the forefront of (academic) risk modeling for the next years to come. I therefore recommend publication of this article after some minor comments have been addressed, see below.

### Main comments

My main comments are regarding the hazard set used in this analysis. While I understand that this is (probably) the exact same hazard dataset as was used in Rana et al (2021), I still think it's good to provide a bit more information on the construction of this hazard set. Particularly since this manuscript focuses on uncertainty analysis.

- (Line 270). Could you please explain in more detail what the event set is; what input data is the set based on, how exactly is this event set perturbed in CLIMADA?
- To my understanding, CLIMADA will only perturb tropical cyclone tracks present in this event set. Does this mean that unprecedented events won't be simulated by CLIMADA? How certain are you that the resulting set of tropical cyclone events presents the full range of all possible events near Vietnam?
- Section 3.3.1. Could you please elaborate a bit on how exactly the original case study uses the parameters from Knutson et al. (2020)? Does the future-climate event set also contain information on shifts in tracks/genesis locations? And are the changes in intensity uniformly applied across the track, or does this only apply to the peak intensity?

- I like the final sentence of Section 3.2.6 "*Together, these results hint to potentially hidden high-impact events in unexpected areas*" (line 338), but it also feels like a cliffhanger! What events are we talking about, could you please give an example of such event in the text/figure?
- Line 325: For me, it's unclear why this number is 1.85m. Does this have to do with protection standards?
- I recommend to acknowledge somewhere that the results obtained here are solely for storm surge, and that including wind and precipitation can alter the outcomes.

### **(Very) minor comments**

- Please check the reference style in lines 53 and 436, and the reference in line 347.
- Please consider writing "exposure" throughout the manuscript rather than "exposures". To my understanding, exposure is the more commonly used term to address the full set of exposed elements, and the use of exposures leads to some grammatically incorrect sentences in the manuscript (e.g. line 26)
- Line 301 - 303 is very hard to follow. Please consider breaking this sentence up in two or rewriting this sentence.
- "Adaptation" is misspelled as "Adpatation" in multiple instances.