

NHESS-2021-251

Towey et al "Tropical cyclone storm surge probabilities for the east coast of the United States: A cyclone-based perspective"

I applaud the authors for the thorough revisions of their manuscript. The current manuscript has certainly improved compared to the previous version and I feel that it is almost ready to be accepted for publication. Please find below some minor comments:

Line 40: a temperature isn't warm or cold, but high or low

Line 122: You could also argue that a TC passing > 500 km from a site generally has a limited impact

Line 126: could you add the respective wind speed threshold on the Saffir-Simpson Hurricane Wind Scale here?

Line 142: I would leave out the mention of ETCs here, as this is confusing

Table 2: Strictly speaking is this table showing results; I would therefore move this to the Results-section (as you discuss the table there).

Line 208 - 209, Line 224-225: I thought you left out the extratropical cyclones? If this is the case, I would try to limit the mentioning of ETCs or ET transition, as these sentences seem to imply that ETCs are also being investigated (plus, I believe that the storm surges you are looking at are solely those of storms classified as TCs?)

Line 236: Though I understand you want to mention Sandy and its extraordinary track here, I would rephrase this mentioning of Hurricane Sandy, because the current write-up is confusing to the reader. I would suggest to say something along the lines that "Some readers might be familiar with the most infamous event in this region, Hurricane Sandy, which had a SE-NW track orientation that substantially differed from this general northeastern movement (Hall and Sobel 2013). However, as Sandy had underwent extratropical transition upon approaching New Jersey, this event is left out from our analysis as we solely focus on TCs."

Perhaps an interesting feature to help clarify your results for the direction is the orientation of the wind field? (which is counterclockwise in the NH). You do briefly mention this in the paragraph below Figure 6, but perhaps it's helpful for the reader to also be "reminded" of this in the discussion of Figure 5, where you do discuss the orientation of the track and its effect on storm surge heights.

Line 272 (but also other instances in the Results-section wherever appropriate): Could you please explain (from a physical point of view) what this negative correlation means?

Table 3: Could you please use an asterisk (*) instead of italics to indicate the statistically (not) significant results? I had a hard time finding the italicized numbers.

Line 292: I would leave out the mention of the hurricane season here, because technically speaking a TC can also occur outside of the hurricane season.

Lastly, following the Editor's suggestion (See "Editor decision" on 28 November 2021), I would suggest to add a paragraph/a few lines of discussion on how your research can be applied to other types of storms. How can one use your approach to study other types of storms and in other regions, and what kind of data is necessary to conduct such research?