

Interactive comment on “Wave-current interaction during Hudhud cyclone in the Bay of Bengal” by Volvaiker Samiksha et al.

Anonymous Referee #2

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The paper at hand is interesting, and addresses an important topic, namely the influence of wave-current interactions on water set up, current magnitude, and water wave evolution in very strong conditions. The case studied here is the Hudhud cyclone. Obviously, the topic is relevant for publication in Natural Hazards and Earth System Sciences. Furthermore, the paper is clear and well structured. It is relatively well written, and pleasant to read. For these reasons, I believe it should be published in NHESS. However, I have some concerns, which, if addressed, could help improve the paper.

1) The introduction states that “The present study primarily aims at quantifying the impact of wave-current interaction on waves during the Hudhud cyclone”. But the paper presents more results than this (effect of wave-current coupling in the modelling tech-

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nique for predicting set-up, current, or waves). Later, the discussion clearly focusses on the modelling technique, and the influence of coupling wave and currents from both models. This issue is more technical, but also really interesting. Finally, the conclusion comes back on the topic suggested in introduction. I suggest the authors slightly modify introduction and conclusion to mention both type of results in introduction and conclusion.

2) The modelling procedure for SWAN could be detailed a little bit more. The conditions used here are really not usual conditions, and a commentary on how accurate the approximations are in hurricane conditions would be welcomed.

3) Except for the wave buoy data (I would appreciate to see the location of the buoy on a map, by the way), the paper suffers a lack of data for validation. Could the authors access some other data, such as surface velocity from satellite, or water elevation from PSMML, for instance? It would help validating the numerical results.

4) In section 3.4, I had difficulties to understand if the “SWAN alone” simulations were referring to SWAN with absolutely no current, or SWAN with input current from ADCIRC, but no coupling. This clarification is obviously important for interpreting the results.

Minor points:

- section 2.1, line 94. There is a misprint on the location of the wave rider buoy. Furthermore, I could not understand what the +20m -20m measurement range refers to. Wave Height? It seems huge, and is probably not true regardless to the waves frequency.

- Section 3.1: Do we have an estimation on how accurate Holland’s numerical results were? Could the authors mention it with a sentence?

- For every figure, the captions are not detailed enough. Most of the time, it is unclear what symbol corresponds to what line. The date and time used for various maps are not mentioned.

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