

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-211

Anonymous Referee #2

Referee comment on "The Influence of Infragravity Waves on the Safety of Coastal Defences: A Case Study of the Dutch Wadden Sea" by Christopher H. Lashley et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-211-RC2>, 2021

Dear authors,

Let me start by commending you on your work and on addressing a topic (infragravity waves) I find fascinating and of much relevance for coastal studies. I agree with you when you mention it has been a somewhat neglected area of research.

The work by Lashley et al. focus on the influence of infragravity waves on safety defences. The manuscript details a case study from the Dutch Wadden Sea.

In my opinion the manuscript fits well with NHES and addresses relevant scientific questions for the journal audience and even wider readers. This manuscript clearly provides a relevant contribution to natural hazards and their study, namely by analysing the impact of infragravity waves in coastal structures.

The scientific quality is in my opinion excellent. I have followed the discussion between the fellow reviewer and the authors. I was very pleased to see that all the issues raised by my colleague were quickly address and that the authors recognized many of the limitations point out. Nevertheless, I must say I found the scientific approach correct. It is multidisciplinary and despite relying mostly on numerical modelling approaches, the field validation guarantees reliability of results presented. The fact that the manuscript is superb in English and structurally helps the reader a lot. Furthermore, I also think the figures are of good quality. In a sentence, the results are presented in a clear, concise, and well-structured way. Figure number and quality are suitable and very informative.

Having said this, I believe the case for the relevance of infragravity waves is not sufficiently stressed and more conclusive and clear evidences are missing. This was also noted by the other reviewer and it is a crucial aspect of this work. It is stressed in the title, in the abstract, etc. but results do not seem to so clearly demonstrate the reasoning forward. I believe the authors must be less enthusiastic and more cautious when writing the discussion. It is crucial that they address the shortcomings and discuss reasons for the poor discrimination made (for example on Figure 10). I am also curious about the error associated with the models and would like to see that clearly mentioned in the methods. The approach used is a succession of different model data and I am wondering if the sum of errors is not above 20%... I am mentioning this because in the abstract you describe increases of 1.1.to 1.6...

Furthermore, roughness is never mentioned and I think it is a crucial physical aspect when we are discussing overtopping. On line 564 you state: "the influence of saltmarsh vegetation on coastal safety under extreme forcing remains an important issue for future research." I was somewhat disappointed that this theme was not further discussed as it deserves. So, my suggestion is to add a paragraph further discussing this topic after line 600, for example.

Finally, I am worried with the limited number of events analysed and with the narrow spatial distribution studied. To support some of the bolder statements regarding the relevance of infragravity waves the authors should have provided a more extensive database. Despite this, I feel this is a very good contribution to this scientific subject and deserves to be published on NHESS after some minor changes are made.

Another aspect is the extension of the Conclusions. They must be more focused and a couple of paragraphs could be deleted as they are very generic.

A final note on some self-citation and what I consider to be an average reference list. There are a few classic papers missing...

My review is more generic but I have to stress that the authors should address the broad aspects I raised and clearly must follow my fellow reviewer exceptional review that provided an extensive list of aspects that need to be clarified. Not to repeat comments between the two reviewers I would like to stress these 4 general topics that need to be developed in the manuscript:

Case presented is not sufficient to prove major importance of infragravity waves

Error associated with models and poor discrimination

Roughness

Conclusion must be shortened

Based on the above I recommend this manuscript to be accepted by NHESS after some minor revision.

Thanks for the opportunity to review this manuscript.

Kind regards

Other brief notes:

Are the scientific methods and assumptions valid and outlined clearly?

Some clarification would be beneficial.

Are the results sufficient to support the interpretations and the conclusions?

Yes, partially.

Does the author reach substantial conclusions?

Yes, partially.

Is the description of the data used, the methods used, the experiments and calculations made, and the results obtained sufficiently complete and accurate to allow their reproduction by fellow scientists (traceability of results)?

So it seems.

Does the title clearly and unambiguously reflect the contents of the paper?

Yes, partially.

Does the abstract provide a concise, complete and unambiguous summary of the work done and the results obtained?

Yes.

Are the title and the abstract pertinent, and easy to understand to a wide and diversified audience?

Yes.

Are mathematical formulae, symbols, abbreviations and units correctly defined and used? If the formulae, symbols or abbreviations are numerous, are there tables or appendixes listing them?

Yes, partially.

Is the size, quality and readability of each figure adequate to the type and quantity of data presented?

Yes.

Does the author give proper credit to previous and/or related work, and does he/she indicate clearly his/her own contribution?

Yes.

Are the number and quality of the references appropriate?

No.

Are the references accessible by fellow scientists?

Yes.

Is the overall presentation well structured, clear and easy to understand by a wide and general audience?

Yes.

Is the length of the paper adequate, too long or too short?

Adequate.

Is there any part of the paper (title, abstract, main text, formulae, symbols, figures and their captions, tables, list of references, appendixes) that needs to be clarified, reduced, added, combined, or eliminated?

The outline should be deleted.

Is the technical language precise and understandable by fellow scientists?

Yes.

Is the English language of good quality, fluent, simple and easy to read and understand by a wide and diversified audience?

Very much so.

Is the amount and quality of supplementary material (if any) appropriate?

Yes.