

Dear Editor, Dear Anonymous Referee #2,

We thank you for your appreciation and valuable time, effort, and insightful comments on our manuscript. Each comment and suggestion have been addressed in detail below.

Referee #2 Comments in **Orange colour**

Authors' replies in **Black**

COMMENTS and REPLIES (Reviewer#2)

Specific comments

3. Methods

Line 67: "*In addition to the recorded tsunami wave height of 12-15 m in 1945 at Pasni...*" This information has not been provided before, but here is commented as already known. Maybe it should be included in the Introduction where the 1945 tsunami effects in Pasni are described, and then recalled here.

REPLY: We included it in the Introduction part as advised (Line: 38).

Lines 78-79: the utility of the "Fins scenario" is not totally clear: if it is used to "validate" the tsunamites, why isn't the respective flooding shown and discussed as the other scenarios? Anyway, in Table 1 it is denoted as scenario D, so for coherence it should be cited like that in the text.

REPLY: Conceptually, the Fins Scenario is designed to estimate the tsunami potential in the Arabian Sea and validating it through the tsunamites morphodynamics at the Fins locality. The propagation and coastal interaction are given as the simulation file (Supplements Simulations-1 Fins-Sur, Oman) and discussed in the Methodology section. In the updated manuscript, we ensured that the Fins scenario is consistently referred to as "*Fins Scenario*" in the text for coherence as advised (Line: 78, 92).

Line 80: With "*The other tsunami sources*" are you referring to other kind of tsunami sources (landslide, etc), or to other potential seismic sources? This is a bit misleading.

REPLY: We acknowledge the textual confusion. The sources are clarified in the updated manuscript (Line: 79-80).

Now the sentence appears as "*The other tsunami sources such as landslides, volcanoes, and meteoric impacts in the ocean water.....*"

Line 81 (see also comment of Line 67): the information about the 1945 Pasni tsunami could be moved to Introduction or can be left here but the sentence at Line 67 has to be removed.

REPLY: We improved the manuscript by choosing the later choice and deleted the Line 67 as advised.

Line 92 and Table 1: do A, B, C refer to 7m, 10m and 15m scenarios respectively? If yes, write it explicitly, or refer to these scenarios in the text accordingly.

REPLY: We explicitly referred the scenarios in the Table 1 and in the text both as advised.

Lines 100-101: this sentence causes a bit of confusion. Since the authors have already cited three scenarios, are these two additional?

REPLY: We acknowledge the confusion and rectified as advised. We have rephrased the sentence to remove the confusion. Now, it appears as “In total three different scenarios have been modelled for enhanced vulnerability assessment of the study area” (Line: 100-101).

Line 133: the assumption of 0.99 for the parameter CD should be motivated, at least with a citation.

REPLY: We addressed the choice of the parameters with citation as advised (Line: 33)

4. Results and interpretations

Line 199: the authors should explain (in the previous “Methods” section) how this probability is computed and used. Is this the probability for each building to be destroyed? Or is it the percentage of destroyed buildings over the total? Are partial damages accounted for? Add a brief description of the application of the vulnerability method.

REPLY: We have given the relative explanation to all the parts of the question. The partial damages are not taken into the account. We have also added an example showing calculation of the probability through the hydrodynamic force (Line: 125-145).

The calculation of partial damages is not calculated as it needs further data, research and time.

5. Discussion and conclusions

Lines 238-240: indeed, also wave dispersion can play a role, if the wavelength is reduced considerably and the shallow-water approximation isn't valid anymore.

REPLY: Thanks for explaining the phenomenon and concept. We added the “wave dispersion phenomenon” in our sentence too (Line: 248).

Line 290: tsunamis do not manifest on the coast only by sea retreat. The polarity of the first arrival depends on many features: the source characteristics, non-linear effects in shallow water, the position of the coast with respect to the source.

REPLY: We added a sentence, technically explaining the coastal retreat or drawdown phenomenon and linked its dependency with respect to watch and alertness warning (Line 300-302).

Minor issues and typos

Line 79: “*The tsunamis ARE generated*”.

Line 80: “*Table 1*” instead of “*table 1*”. Line 97: “*multiproxy proxy*” does not sound correct; remove “*is*” after “*return period*”. Line 140: “*experiences*” instead of “*experience*”. Line 143: “*In the 10 m wave scenario, along with first wave a secondary wave with a wave height of 8 m is generated*”. The word “*wave*” is repeated too many times, rephrase this sentence or

change wording. Line 193: At the end of the sentence, remove “.

REPLY: We rectified all these errors as advised.

Title Adjustment:

We removed the “Integrated” word from the title. While undergoing major revision, we removed the static analysis component from the manuscript. Therefore, we realized the term “integration” remains no more relevant.

Now the title appears as “Tsunami inundation and vulnerability analysis at the Makran Coast, Pakistan”