

Dear Editor,

we have read the reviewer's comments and went through the manuscript fixing and implementing most of the proposals and the remarks presented.

We don't agree with the main point raised, concerning the Froude number definition, and we didn't change the plots representing this parameter as proposed, since we believe that our computations are correct: please read our answer to 1. Major comment for more details.

The reviewer's remarks are reported in black; our replies are in red. Please consider that the line numbers cited in the answers refer to the new version of the manuscript, with track changes enabled.

Waiting for your feedback, we thank both the reviewer and you for your work.

Best regards

Prof. Filippo Zaniboni (corresponding author)

Authors' comments - REVIEWER#1

The authors have improved the manuscript. However, there are still a few points that should be addressed before publication. The most important one concerns the definition and interpretation of the Froude number used throughout the results. I also list minor comments.

1. Major comment – Froude number: definition and interpretation

In the revision, the Froude number is introduced as “the ratio between the landslide velocity and the tsunami phase velocity in the shallow-water approximation”. The authors need to give the definition clearly. The standard definition is $Fr=U/gH$, where U is the speed of slide and H is the local water depth. In practice, U is the frontal speed of the landslide, and H is the water depth at the front. And thus Froude number cannot be defined when the slide plunges into the water.

The Froude number is a dimensionless ratio of velocities. Near-critical conditions ($Fr \sim 1$) indicate strong kinematic coupling between slide and long waves and are favourable for efficient energy transfer, but Fr does not itself “measure the efficiency of the energy transfer”. Wave generation also depends on slide volume, thickness, density contrast, geometry, etc.

I think the Fr number was wrongly calculated, and thus the authors update these figures.

To be a dimensionless parameter, Fr must be defined as we did in the text: the term gh has the dimensions of a squared velocity, then the definition proposed by the reviewer implies a Froude number with dimensions v^{-1} . Indeed, the standard definition of the Froude number is $Fr = U / \sqrt{gh}$, with U as the horizontal speed of the landslide and \sqrt{gh} corresponding to the tsunami phase velocity in SW. In this version, Fr becomes a velocity ratio, as the reviewer him/herself states. We did not change, then, the Froude number computations and the respective figures.

We agree with the comment that Fr is not the only parameter influencing tsunami generation, even though that sentence was not intended to state this. However, we have changed the sentence to “ Fr provides an indication of the efficiency of the energy transfer” (L302), hoping this make it clearer.

2. Minor comments

L97–98 “A tsunami can be considered mostly as a packet of waves ...”

This statement is vague and a bit misleading. Tsunami wave trains can indeed be described as packets of long waves with a characteristic period range, but this is not a universal or sufficiently precise definition.

We wanted to suggest the idea that a tsunami is not a monochromatic oscillation but incorporates several components with different period. The sentence has been slightly rearranged, removing the “packet of waves” term (L97).

L166 – “regularly”

The meaning of “regularly” is unclear here. If you mean “equally spaced” or “uniformly distributed”, please use that wording. Otherwise, specify exactly what property is “regular”: spacing, amplitude, temporal sampling, etc.

Fixed (L171).

L176–177 – “shows some remarkable features as concerns landslide-tsunami triggering and propagation”
This phrase is unclear.

The sentence has been rephrased (L181-182).

L447–452 – very long, unclear sentence

The sentence spanning L447–452 is too long and hard to parse. Please split it into two or three shorter sentences, each conveying a single main idea.

In the new version of the manuscript, such lines correspond to L457-462 where, indeed, there were already three separated sentences. We have split the first one into two shorter phrases (L458).

Table 3 – inconsistency in λ , b and λ/h

There is an inconsistency: in the text the initial wavelength is approximated as $\lambda \approx 2b$, while in the Table 3 caption states that λ coincides with b.

Fixed, thank you.

3. References

Some in-text citations are missing from the reference list, e.g. Ward (2001) (“surprise tsunamis”) and Selva et al. (2018) (Introduction).

Reference to Ward (2001) added, Selva et al is (2021) and not (2018), and has been corrected in the Introduction.

Some references appear to have an incorrect year (e.g. Abadie et al., “La Houille Blanche ...”, where the DOI suggests a different year than the one printed). Please verify against the original journal.

Abadie et al year fixed, all citations checked.

Verify DOI/URL at the end of the bibliography that duplicate information already contained in properly formatted entries. These look like copy-paste artefacts from a reference manager and should be removed, keeping only the standard formatted references.

Checked and fixed.