

## ***Interactive comment on “Assessment of the 1783 Scilla landslide-tsunami effects on Calabria and Sicily coasts through numerical modeling” by Filippo Zaniboni et al.***

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Received and published: 17 May 2019

General comments:

The manuscript aims in completing an earlier work based on the simulation of a lethal landslide generated tsunami along the Calabria coast. This paper simulates the tsunami effects in a new region, further away for the landslide source, in Sicily. This is scientifically significant in understanding the tsunami hazard in the area.

The technical approach and the methodology applied are based on commonly approved scientific base and the presentation of the data and the results are clear and

C1

concise. The idea of reconstructing the morphology for better simulating the phenomenon is novel and proved valid.

In order to give the paper a wider approach with a more general appeal, I would suggest discussing more the tsunami hazard and risk assessment issue. More specific, the conclusion of the last paragraph is very interesting and important and it would be nice if it is highlighted more.

The answer is “YES” to all of the following questions, with an exception to question 20. English language can be improved for better understanding:

1. Does the paper address relevant scientific and/or technical questions within the scope of NHESS?
2. Does the paper present new data and/or novel concepts, ideas, tools, methods or results?
3. Are these up to international standards?
4. Are the scientific methods and assumptions valid and outlined clearly?
5. Are the results sufficient to support the interpretations and the conclusions?
6. Does the author reach substantial conclusions?
7. 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)?
8. Does the title clearly and unambiguously reflect the contents of the paper?
9. Does the abstract provide a concise, complete and unambiguous summary of the work done and the results obtained?
10. Are the title and the abstract pertinent, and easy to understand to a wide and diversified audience?

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11. 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?
12. Is the size, quality and readability of each figure adequate to the type and quantity of data presented?
13. Does the author give proper credit to previous and/or related work, and does he/she indicate clearly his/her own contribution?
14. Are the number and quality of the references appropriate?
15. Are the references accessible by fellow scientists?
16. Is the overall presentation well structured, clear and easy to understand by a wide and general audience?
17. Is the length of the paper adequate, too long or too short?
18. 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?
19. Is the technical language precise and understandable by fellow scientists?
20. Is the English language of good quality, fluent, simple and easy to read and understand by a wide and diversified audience?
21. Is the amount and quality of supplementary material (if any) appropriate?

Specific comments:

It is not clear how the resolution of the GEBCO grid, which is usually 150m the best, was improved using nautical charts. Which is the resolution of these charts for this quite big area? The concern here is if the re-sampling of the GEBCO grid down to 50 m adds any details or it is just a "cell-split". It might be the case that 50 m bathymetry grid

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resolution is needed, just to be at the same level as the onshore topography, which is usually at higher resolution than the bathymetry. If this is so, it should be clearly stated.

With which kind of offshore data the 10 m resolution Grid 3 has been constructed. There is only information for the topography. IF such a resolution is artificial for the offshore region, this should be clearly stated.

The swept area or sliding surface is represented in the figures as a polygon. Who did you define the limits of the area offshore? Was there a detail description in one of the reference papers? Moreover, the bottom limit would look better if it was not a straight line.

Figures 8, 9, 10 & 11 should come after the reference in the text.

A clarification of the terms wave height, wave elevation and flow depth will improve the understanding of the manuscript.

Use constant naming for the grids, e.g. p18 line 32 in contrast to p18 line 24

Parts of the conclusions need rewriting. Some refinement in English language will improve the text. For example, in the last line the word design fits better than "devising", since it is common terminology for this subject.

Technical corrections:

Figure 1: In this figure Capo Peloro and Messina should be indicated in the inset, it should also be mentioned that the yellow arrows points at Scilla. The Google earth image needs indication of the north. Mt Paci should also be pointed in the figure.

P2 line 10: "the cape of Sicily in 10 front of Scilla" it might be more appropriate the term opposite instead of in front.

P3 line 5: "inducing" consider forcing instead

p3 line 7: "ensuing" consider subsequent instead

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p3 line 16: "outside" consider along instead

p3 line 21: "vanish" consider attenuate instead

p3 line 24: "corner" consider part instead

p3 line 27: "about 40 m far from the today shoreline" consider "about 40 m onshore, in regard to the present shoreline" instead

Figure 2: Signs for east (E) and north (N) should follow the degree sign in parenthesis for latitude and longitude. The area marked in red is indicated as the landslide swept area. Consider using the tem sliding surface instead.

p6 line 27: "the tsunamigenic failure was a purely subaerial collapse" consider "the tsunami generation was purely attributed to the subaerial collapse" or "the tsunamigenic source was a purely subaerial collapse" instead

p6 line 31: "scenario tsunami" consider "tsunami scenario" instead

p7 line 23: "CoM" initials should be defined, i.e. Center of Mass(?)

p8 line 15: "GEBCO" Which version of GEBCO and at which resolution.

p9 line 2: "reports" considered illustrates instead

P9 line 14: "The picture of Figure 5" consider "The wave height distribution illustrated in Figure 5" instead

p9 line 16: "ranges" you mean reaches?

P10 line 2: "stretch" consider using area instead

Figure 5: "in the legend together with the inundation distance (I) and runup (R)", I would add the word "observed" to avoid any misunderstanding, "in the legend together with the observed inundation distance (I) and runup (R)"

p13 line 7: It seems that the eastern most extreme is reached after 40s (i.e. T180),

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although it depends on where you put the limit for eastern extreme.

p13 line 8: "Contemporarily" consider at the same time instead.

p13 line16: consider illustrated instead of "reported"

p13 line 17: "(#1)" consider (#1 figure 5) instead. Is this point #1? It Is not clear.

p14 lines 3-9: Some refinement in English language will improve the text.

p14 lines 11-18: Some refinement in English language will improve the text.

p14 line 21: "agents" consider factors instead

p14 line 22: "Basing" consider Based instead

p15 line 5: "The 5 correction done is shown in green-blue when negative (meaning "digging" with respect to the present ground level) and in yellow-red when positive, meaning increased ground elevation." Some refinement in English language will improve the text.

p16 lin2: "reported" consider shows or illustrates instead.

p16 line7 : "The most relevant changes regard the area between the north-east corner of Pantano Piccolo and the Torre Bianca site, where a 1 to 5 m surface layer of ground has been removed." Consider "The most relevant change regarding the area between the north-east corner of Pantano Piccolo and the Torre Bianca site is the removal of 1 to 5 m of surface ground layer.

p16 line 11: "agents" consider factors instead

p17 line2: "filed" consider frame instead

p17 line 10: "chief" consider main instead

p19 line 4: "outside" consider besides instead

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