

**Reviewer 1:**

I appreciate the authors, Dr. Zorn and the colleagues, for their careful consideration on the comments. I am satisfied with the authors' response on my comments including the objectivity of ranking system, weighting, and linear relationship. The quality of figures was also improved. However, the response on the heat map and travel-distance plots is still not clear. Therefore, the reviewer recommends the paper to be accepted for publication after minor revisions have been made to address the following comments.

**Reply: We thank the reviewer for this positive assessment and further address the heat-maps and travel-distance plots, see below.**

(1) I understand the travel and arrival times of specific volcanoes are independent of the magnitude. The authors are pursuing a simpler and more robust approach. However, as a paper on volcano risk assessment, I think it is necessary to incorporate the information of possibility (i.e., hazard score) in the discussion of travel/arrival times. Not all volcanoes have a similar probability to trigger tsunami propagation.

**Reply: We agree with this comment and add this aspect to the discussion as suggested. However, since we are still limited to relative scale of our possibility information from the hazards score, we can only do this qualitatively here. In-turn we emphasize that more specific possibility information (e.g. expected tsunami frequency of individual volcanoes) could be used for a more quantitative assessment using our travel/arrival time data.**

**Page 31, line 605: "Similarly, it is important to emphasise that the probability of the modelled tsunamis are not equal between the volcanoes, and we cannot present a full risk assessment (including e.g. the tsunami probability within a given time period), since the required data is still too sparse. However, our ranking can prioritise which volcanoes are most likely to produce such an event as demonstrated here, but this type of analyses would greatly benefit from quantitative data on future tsunami probability."**

(2) The additional heat map shows the most likely source locations based on a weighted point density calculation using our hazard score (impact multiplied by the hazards score). Please specify the physical meaning of "impact" and show more details about the calculation.

**Reply: We agree and clarify our calculation further. Here, the term "impact" may an unsuitable and confusing word here since we intended it to mean the point density value,**

not a tsunami or volcano impact on the coast. We corrected this and are more explicit on the heat map-calculation.

Page 27, line 517: “For this, we used the kernel density function of Esri®ArcMap™ (version 10.5.0.6492), which calculates the point-density using the interpolated number of points (the volcano locations) within a specified search radius, here ~280 km. The point number is multiplied by our hazard score value for the respective point volcano, which additionally increases the density value in the area around volcanoes with high scores.”

(3) The generation mechanism was regarded as a point source. I am wondering whether the assumption could result in some discrepancies in near-field TTT calculation. Please discuss.

**Reply:** This is a particularly interesting point and we add a short discussion as suggested. Generally this will depend on the triggering mechanism, so for an explosion a point source will likely be appropriate, but a volcanic earthquake may require more complex models

Page 31, line 609: “An additional issue may be the point-based approach of our models, which can cause erroneous arrival times, particularly in the near-field of the tsunami source, if the source is spatially more complex. For volcanic tsunamis with yet unknown properties, point sources are likely appropriate for most cases as the most common sources explosions, PDCs, landslides, and lava dome collapses (Fig. 5) are typically not larger than a few hundred meters. However, large scale sector failures of volcanoes or certain types of earthquakes can likely displace water over larger areas simultaneously and may require more complex source models to accurately capture the tsunami wave near-field.”

#### **Reviewer 2:**

This manuscript of Dr. Zorn and the colleagues has been extensively revised, and the authors excellently responded my and the other reviewer’s comments. Their major changes improved the manuscript largely and made the importance of this paper clearer, as follows.

- The authors newly performed a statistical analysis to avoid, as much as possible, the problem regarding the subjectivity and human error, as well as adding detailed and clear discussion parts.

- The authors clearly explained the reason why the tsunami travel time (TTT) modeling is preferred, compared to specific numerical tsunami simulation with a specific source model. Now I agree that the TTT modeling would be a nice approach, given the difficulties, complexities, and variations in modeling volcanic tsunami sources.

- I found that Supplementary File B is useful to examine how the results change when the weights are set differently.

The volcanic tsunami hazard assessments presented in this manuscript that cover volcanoes in this region will give great contributions to the communities' future needs to examine volcanic tsunami potentials at each volcano. I believe that this manuscript will be suitable for publication from NHESS, after modifying a few very minor points below.

**Reply: We thank the reviewer for the positive feedback**

[Minor comments]

Figure 4:

In my understanding, the color is classified by the final setting of the factor weights, whereas the vertical axis with a plot and an error bar represents the average score and the standard deviations from repeat scoring. If this is correct, please explicitly explain the color is obtained by the final setting of the factor weights in the caption.

**Reply: This is correct, the colors are based on our final setting, while the graph shows the averages and standard deviations. We now clarify this in the figure caption as suggested.**

**Page 22, line 408: "...However, for the medium and low hazard volcanoes (here classified by colour using our final weights and score, see Table 2) the ranking is less robust, due to a high number of volcanoes with similar scores, which can significantly change the hierarchical order depending on the chosen factor weights."**

Also, what the labels a, b and c indicate? Please add the explanation in the caption, or you may remove the labels. The font of Hazard Score in b has a different panel, which should be modified.

**Reply: The a, b, c labels were added as we had to split the plot in 3 separate panels due to the figure size, but as they are still the same plot we agree and removed them here. The fonts in panel b was also adjusted to match the rest of the figure.**