

Journal: NHESS

Authors: Tadini et al.

Title: *Probabilistic tsunami hazard assessment at Stromboli volcano: 1. Review of historical sources and expert elicitation findings*

General comments

I appreciated the opportunity to review this manuscript by Dr. Tadini and the colleagues. This work represents the first part of a two-paper study addressing tsunami hazard assessment associated with landslide-generated tsunamis specific to Stromboli volcano, where probabilistic treatment is generally challenging because the hazard is low-frequency and constrained by limited observations. In this paper (Paper 1), the authors review past events and describe the expert elicitation process, which provide the basis for the probabilistic tsunami hazard assessment (PTHA). These results are subsequently integrated with numerical simulations in Paper 2.

Their analysis is based on two main components: (1) a compilation of historical descriptions of landslide-generated tsunamis at Stromboli, and (2) expert elicitation. The historical review appears comprehensive, drawing upon documentary materials, scientific publications, and historical records. In contrast, the definition, selection criteria, disciplinary backgrounds, and relevant expertise of the participating experts remain unclear. Since the elicitation results form a key component of the hazard assessment, additional information on the expert panel is necessary to evaluate the validity and robustness of the analysis.

First, since the elicitation results form a key component of the hazard assessment, more information should be provided regarding the expertise of the 21 participants. Were they selected based on their experience with Stromboli volcano specifically, volcanic tsunamis, landslide processes, hazard assessment, or related fields? The authors are recommended to clarify the selection criteria, more detailed disciplinary backgrounds, and potential sources of bias arising from the composition of the expert panel.

Second, were the experts provided with information on large volcanic landslide and tsunami events from other volcanic systems in addition to the historical record of Stromboli, such as the 2018 Anak Krakatau tsunami or other large volcanic flank-collapse events? If so, the authors are recommended to describe the material presented. If not, discuss how the absence of such information may affect the

assessment of low-probability, high-consequence scenarios beyond the historical record of Stromboli. Expert elicitation is presumably intended to complement the limitations and biases of the historical record. However, if the experts' judgments are themselves strongly influenced by the historical events observed at Stromboli through the preparatory materials, it is unclear to what extent the elicitation provides information beyond the existing record.

I acknowledge that such biases cannot be completely eliminated in studies relying on expert elicitation. However, the characteristics of the expert sample and the potential biases arising from its composition, background, and the preparatory materials provided before the elicitation should be described and discussed more carefully. Providing additional information on the selection process, expertise, and possible limitations of the expert panel would greatly improve the transparency and robustness of the study. Overall, I believe that the manuscript is of sufficient quality for publication in NHESS, provided that these concerns, as well as the minor comments listed below, are adequately addressed.

Specific comments

L145. *newspapers were carefully evaluated for potential inaccuracies.*

How were potential inaccuracies in the historical records evaluated? For example, were differences in the reliability of newspaper sources considered, and were the reported events cross-validated against independent materials or other historical records? Please clarify the procedures used to assess the credibility and consistency of the historical information.

L183. Please consider writing “*On the other hand, the case in which all experts are assigned the same weight is called the equal weight*” to clarify that this is different from what the authors used here.

Technical corrections

L91. “XX century”, L232. “VIII century” and others

Please consider using the more common notation such as “20th century” in the scientific literature.

L101. “Ustica” is not in the map (Figure1). Please describe the distance (how far) from Stromboli or add the location in Figure 1.

L170. “m” should be “*m*”

L335. *Four out of the ten tsunamis*

L347. What are the numbers in “2019 (2)” and “2022 (2 observed at ...)”? If this represents the 2nd event in 2019 and 2022, respectively, please clarify by noting the date, instead of the number. Also, Table 3 should be referred to in this sentence or earlier.