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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "The 22 December 2018 Mount Anak Krakatau Volcanogenic Tsunami on Sunda Strait Coasts, Indonesia: tsunami and damage characteristics" *by* Syamsidik et al.

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Dear The Referee,

We appreciate very much your valuable time to comment on our paper. We are pleased with your comments and inputs to our paper and we regard them as important contribution to ensure the quality of the paper meet the scientific standard of the Journal. Now, permit us to respond to your comments one by one in the following sections.

THE REFEREE GENERAL COMMENTS:

In this paper, detailed survey data of the area damaged by the tsunami caused by the

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volcanic flank failure are reported. Also the relationship between tsunami flow depth and damage of houses is discussed. The paper is worth published not only because the data are very valuable but also because the damage was caused only by tsunami without any other effects such as earthquake and associated liquefaction.

OUR GENERAL REPLY: Thank you very much for the comments. We also regard this tsunami as a special case where there is no other impact prior or after the tsunami waves hit the affected area. Therefore, the impacts observed at damaged structures/infrastructures were solely caused by hydraulic impacts combined with the quality of the structures. As the case like this one is very rare, it is an important opportunity for us to investigate further on impacts of the tsunamis on structures.

COMMENT #1: P.4, L22: "0.0805 cycle per day" indicates the period of 11.76 day. Such a long period astronomical component has nothing to do with tsunami. Is this a mistake with "cycle per hour"?

REPLY #1: Thank you for noticing the mistake. It should be 0.0805 cycle per hour (cph).

COMMENT #2: P.6: Looking at Fig.2, the amplitude of tsunami wave is about 1m at the highest. The reviewer is wondering why such a small tsunami yielded inundation depth over 5m. Are the tide stations located not on the coast but in deeper waters?

REPLY #2: The station was not severely affected by the tsunami waves. Furthermore, the characteristics of the tsunami wave generated in the volcanogenic tsunami has shorter wave length than tectonic tsunami. These resulted in short distance of tsunami runup.

COMMENT #3: P.7, L5-7: The report by the interviewees does not correspond to the waveform at the tide station. Any comment should be given on this point.

REPLY #3: It is difficult to confirm what the interviewees expressed to the tide gauges data. There are two explanations to this, (1) the locations of the tide stations are

far from the locations of the interviewees. Most of the interviewees were not located around any tide gauge stations, (2) records at the Marina Jambu station (which is the closest one) were reported as one-minute average data. With these data, it is difficult to know the first and the second wave if the wave period shorter than one minute. We will add these explanations in our revised manuscript, as requested.

COMMENT #4: P.10 and 11: Figure 11 and Figure 12 are interchanged. Need to be replaced.

REPLY #4: Thank you very much. We will re-organize both of the figures in our revised manuscript so they will appear in sequential order.

COMMENT #5: P.2, L7: "was" is duplicated.

REPLY #5: Thank you. We will revise the statement to: “This was the case for communities around the Thyrrenian coast of Italy.”

COMMENT #6: P.2, L9-10: The reviewer does not understand the meaning of the sentence.

REPLY #6: Thank you for noticing the sentence. We will revise the sentence to make it more readable as follows: “As the volcanogenic tsunami event is a long frequent event, effective mitigation measures for such non-tectonic tsunamis could be difficult to be seen in actual practices”.

COMMENT #7: P.2, L25: What is a-45 m wave?

REPLY #7: It should be a -45 wave height. We will revise it in our revised manuscript.

COMMENT #8: P.5, L11: most of them houses –> most of them were houses

REPLY #8: Thank you, we will include them in our revised manuscript.

COMMENT #9: P.6, L15: Cilegon –> Ciwandan

REPLY #9: Yes, we agree with the referee. It should be Ciwandan station, not Cilegon

Station.

COMMENT #10: P.6, L17: later –> earlier

REPLY #10: Thank you. We will change the word accordingly.

COMMENT #11: Caption of Fig.3: "tsunami flow height" should be changed to " "run-up height" so that the same expression as in the figure is used.

REPLY #11: We will change the words to “tsunami run-up height” conforming the texts in the figure.

COMMENT #12: P.10, 4.2.2: In this section, explanation is given in the order of the area number 4 -> 3 shown in Fig.1. Changing the order to 3 -> 4 should be better for the readers.

REPLY #12: Thank you for noticing the order. We will move P.10 lines 19-31 to the first part in the section, followed by explanation about Kalianda Area (Area 4) in our revised manuscript.

COMMENT #13: P.12, L7: "table 1" should be in Bold.

REPLY #13: We agree with the Referee to make it bold.

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