Dear Referee #1,

First of all, thank you very much for all the suggestions! We would like to discuss some of the suggestions and comments. The responses of the suggestion and comment are as follows:

General comments: The paper deals with tsunami amplification in a closed bay. The authors applied an analytical model to the case of the 2018 Palu Tsunami and claimed that the model described the tsunami run-up in a narrow bay well. The analytical model itself is an existing one and I do not see anything new in it. The way of applying the model to the case appears to be rough, and thus, the results are not convincing. I do not think the paper is in publishable quality. The authors need to carefully discuss the model applicability and validate the model from different perspectives.
Response: We indeed used the existing model to estimate the maximum run-up height. This is why we formulate this paper as a brief communication, not a research article. We want to emphasize that we were looking for a simple formulation to find the maximum run-up, which the observed run-up height will not exceed. It is only used to calculate the run-up of the tsunami in the worst-case scenario through this simple calculation. We hope that the field observer can easily and quickly estimate the maximum run-up of a tsunami in a certain location without using a time-consuming numerical simulation and a large dataset.

Specific comment 1: The bay topography is shown by a 3D plot in an ambiguous way (Figure 1). I suggest the authors to provide the longitudinal cross-section and transversal cross-sections at some representative locations with a length scale (not in longitude/latitude). Additionally, the authors need to compare the longitudinal transition of the cross-sectional area in comparison to the idealized bays in the model, which is important in discussions of the wave funneling effect.
Response: We have already prepared both longitudinal and transversal cross-sections for the next revision. We neglect the wave funneling effect since we are focusing on the worst scenario along the main axis toward the bayhead (shoreline). We will explain further in the next response.

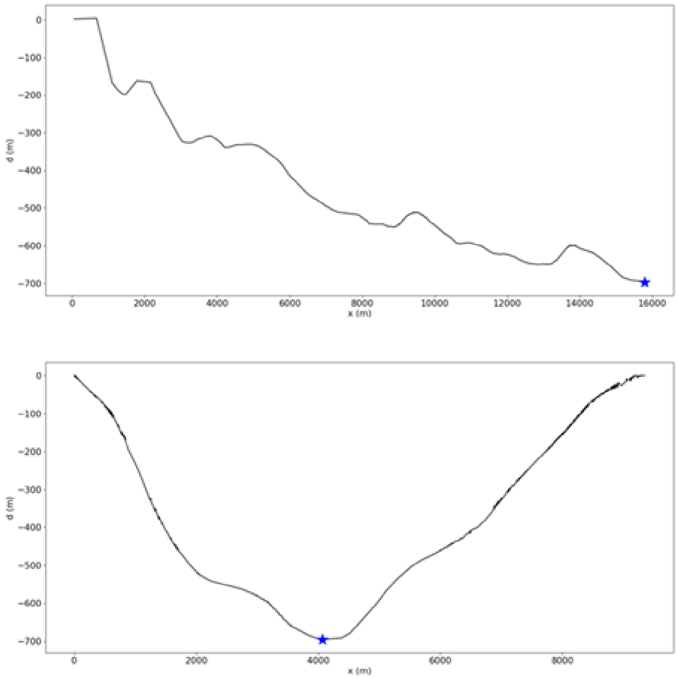

Figure 1. Bathymetry of the Palu Bay

Specific comment 2: Please describe the general characteristics of the tsunami in Palu bay and justify the use of the section-averaged shallow-water model prior to the model introduction. The model is based on some assumptions that hold for specific bay geometries relative to wavelength (e.g. shallow-water and narrow-bay assumptions).
Response: We have checked and proved that the general characteristics in Palu bay satisfy the assumption of shallow-water model. We intend to add these in our next revised introduction.

"*The period of the tsunami in Palu is approximately 3 minutes [2]. According to The National Agency for Disaster Countermeasure (BNPB) [1,3,4], the velocity of the tsunami is at least 800 kilometers per hour. We can find the wavelength of the tsunami from these variables, lambda = 40 km. The ratio between the depth of the Palu bay and the wavelength is less than 0.05. Therefore, the tsunami in Palu bay can be treated as a shallow-water wave.*"

Specific comment 3 : The analytical model is introduced separately for different bay types: rectangular (plane beach), parabolic, and triangular bays. But they can be derived in a unified manner using a single geometric parameter. This is recommended not only for the preciseness of the paper. It enables the authors to consider, for example, an idealized bay between the rectangular (plane beach) and parabolic bays for a better fit to the real bay bathymetry. See [1] for the general expression of the model.
Response: It is a really nice suggestion. However, we wanted to emphasize each geometry using the step-by-step elaboration.

Specific comment 4: The run-up formulas presented in Page 7 are based on asymptotic approximations of the Bessel functions that appear in (27)-(29). As a result, the runup amplification factor (R/A) in Figure 4 goes to zero for a very long wave because the approximation does not work in the range of small omega*t. The authors need to clarify this and show that the Palu case is not in this range. The run-up formulas without the asymptotic approximation are given in [2].

Response: We have checked the angular frequency and travel time of the tsunami in Palu bay. The multiplications of these variables for each bay geometry are large enough to be approximated by the Bessel function asymptotic approximation. We intend to add this to our revised paper.

"*The travel time of tsunami waves in the plane beach, parabolic, and triangular bays, respectively, are 6.3555, 7.7839, and 8.9881 minutes. The angular frequency of the wave is 0.0349 s^-1. Hence, the multiplications of the travel time and angular frequency for each bay geometries, respectively, are 13.3110, 16.3026, and 18.8246. The differences between the Bessel functions and asymptotic Bessel functions approximation for these values in each bay geometric case are small enough (less than 10^-2)*."

Specific comment 5: The model gives run-up height in an equilibrium state under a monochromatic wave. The actual tsunami is a transient one. The authors need to discuss the model applicability in this regard. If there are available tide records at different locations in the bay as shown in Table 1, the authors can validate the model from a different perspective other than the maximum run-up height at the bay head which might be affected by very short waves and local topography.

Response: In this project, our intention is to calculate the worst case of the tsunami maximum run-up height along the main axis. The monochromatic wave travels at a constant energy compared to the transient wave. The wave energy is proportional to the squared of the amplitude. Hence, assigning the maximum amplitude of the transient wave as the constant amplitude of the sinusoidal wave will capture the worst case scenario that we wish to anticipate.

Specific comment 6: The numerical result in Figure 6 exhibits strong transverse variations of the highest crest level in the bay indicating significant effects of transverse flows. This suggests that the tsunami propagated in the bay not as a plane wave as assumed in the model. The authors need to discuss the model applicability in this regard and associated limitations. See [2] for the effect of transverse flows in a closed bay.

Specific comment 7: I do not deny the possibility that the model result agrees with the observed value at 10ˆ-2 m accuracy as presented in the paper. It can happen by coincidence. But the authors need to carefully justify the model inputs since the agreement level is far beyond the model capability.

Response: We chose the model inputs in accordance with our goal, which was to look for the maximum run-up height in the tsunami's worst-case scenario. We were looking for the worst case of the tsunami maximum run-up height. We took into account the fact that the monochromatic plane wave transfers a constant amount of energy. On the other hand, the transverse wave breaking dissipation limited the energy transfer to the bay head region in many bays, as said by Shimozono [2].) Since we only focused on looking at the tsunami's maximum run-up height, we assigned the extreme value of each parameter to the formulation. The models that give the same or overestimated result are better than the model that gives underestimated results. This is the reason why we do not state that the parabolic bay shape is better than the triangular bay shape. We tried to apply this formulation on other tsunami cases and it works well enough (the model provides an overestimation). In this research, we only want to emphasize the Palu tsunami, which was why we didn’t show the other cases results.

Specific comment 8: In relation to the previous comment, the authors need to provide a basis for the choice of the input wave amplitude at the midpoint of the bay from the numerical result. There is a considerable degree of arbitrariness. The numerical result in Figure 6 gives a variation of the highest crest level within the bay, which was not necessarily produced by the same wave that caused the maximum run-up at the bayhead.
Response: With the aim of obtaining the input wave amplitude, first of all we drew the main axis from the shoreline to the mouth of the bay. Afterwards, we compared the bathymetry of the Palu and picked the deepest point of the monotonically-decreasing part of the sea profile along the main axis from the shoreline. Finally, we approximated the value of the amplitude by plotting the coordinate of this numerical result and choosing the nearest tenth value of the amplitude from the numerical result.
According to the chosen model, the monochromatic wave run-up is proportional to the observed amplitude. As the previous response, the monochromatic wave travels at constant energy, this will lead to the worst-case scenario of the tsunami. If we are using the maximum amplitude on this model formulation, it will produce the maximum run-up on the shoreline.

REFERENCES

[1] Al Jazeera and News Agencies (2018), 'Indonesia earthquake and tsunami: All the latest updates', Al Jazeera, 8 October. Available at: https://www.aljazeera.com/news/2018/10/indonesia-earthquake-tsunami-latest-updates-181003060041729.html (Accessed: 16 August 2020)..

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[3] La Chaîne Info (2018), 'Tsunami en Indonésie : pourquoi une vague de 1,50 m a-t-elle été aussi dévastatrice ?', La Chaîne Info, 29 September. Available at: https://www.lci.fr/international/tsunami-en-indonesie-celebes-sulawesi-pourquoi-une-vague-de-1-50-m-a-t-elle-ete-aussi-devastatrice-2099917.html (Accessed: 16 August 2020)

[4] Savitri, Eva (2018), 'BNPB: Kecepatan Tsunami Palu 800 Km/Jam, Hancurkan Infrastruktur', DetikNews, 28 September. Available at: https://news.detik.com/berita/d-4234574/bnpb-kecepatan-tsunami-palu-800-kmjam-hancurkan-infrastruktur (Accessed: 16 August 2020)