

The proposed study aims to show the effect of Human Centered approach in the design of tsunami protection countermeasures while taking into consideration of sea level rise in different levels until 2100. They proposed that the human centered design enables to construct a balance between engineering performance with the lived experiences and values of coastal communities for tsunami mitigation infrastructures. This study developed three different multi-layered tsunami defence configurations prepared including the outcomes of municipalities gathering with the public to let them participate in reconstruction planning and to express concerns about the visual and spatial effects of new seawalls and the potential loss of connection to the sea in the pilot area Kesenuma. It is clearly understood that they evaluate the technical performance of alternative multi-layered defence configurations that integrate community-derived principles through numerical simulation of combined tsunami and SLR scenarios. They used scientific approaches to identify economic loss and fatality rates and applied tsunami numerical modeling for the calculation of inundation extent. The comparison of results reveal that there is a need for policy and design approaches to integrate social, environmental, and structural priorities to achieve resilient coastal protection.

This manuscript has good scientific quality and significance and can be accepted for publication after some technical corrections. The comments for corrections are listed below:

- The abstract needs to be improved. The aim of the study need to be specified.
- Page 1 Line 20: The expression “HCD informed configurations” needs to be reviewed. “HCD integrated configurations” may be used.
- Page 4 Line 40: The sentence starts with “This relationship” which seems not appropriate for a start of new paragraph. There needs to be a link with the previously mentioned topic.
- Page 14 Line 292: There is an empty paranthesis after “source”.
- Page 20 Line 415: Error note occurred.
- Page 21 Line 446: The sentence “The combined use of total-building and key-building losses therefore provides both a system-level estimate of financial impact and a focused indicator of critical infrastructure vulnerability” needs to be rephrased.
- Page 23 Figure 9: The colors are not identified. The difference between (a), (b) and (c) are not clearly noticable. Color scale needs to be improved.
- Page 24 Line 481: Error note occurred.
- Page 25 Figure 11: Blue and green colors are not visible. It is difficult to identify the regional with blue. Color scale needs to be modified.
- Page 29 Figure 14: The economic loss distribution is not visible. It is possible to Zoom-in Kesenuma city and make it clearer.

- Page 30 Line 564: The sentence is not clear. It may be reviewed as “The results demonstrate a clear structural hierarchy across all evaluated indicators, yet the magnitude of difference between the two stronger configurations was smaller than expected, given their contrasting design philosophies.”

There are two other comments given below, which are not related with technical corrections but conceptual improvement:

- In Section 3.3.2, it is stated that three different tsunami sources were implemented in this study as Kuril Trench, the Japan Trench, and the 2011 GEJE (Tohoku) source. However, only the results of Japan trench were presented in the rest of the manuscript. This point should be clarified. Either the other results can be shown or the other two sources may be removed.
- It is understood that tsunami numerical simulations were conducted using TUNAMI-N2, which is reliable and validated-verified model in the worldwide. On page 14 line 303, it is stated that “Reflective boundary conditions were imposed along impermeable coastal structures to simulate wave impact and overtopping processes,....”. However, Table 1 on Page 17 shows the Manning’s value of concrete seawall as 0.015-0.030. It is not clear how reflective boundary conditions are used for the impermeable coastal structures, such as concrete seawalls, in the numerical modeling.

I appreciate the hard work of authors for this study and the concept of having public-participatory design of coastal protection countermeasures to increase community resilience.