

## ***Interactive comment on “Scenario-based assessment of buildings damage and population exposure due to tsunamis for the town of Alexandria, Egypt” by G. Pagnoni et al.***

**Anonymous Referee #1**

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Although the methods applied to this study is common but their results are important for tsunami damage assessment in a specific location, in this case, Alexandria, Egypt. Please consider my comments shown below especially for the effect of tide, coastal structures and making building and fishing boat damage map which I believe that they will add value to the manuscript and also useful in practice.

- Title: Please consider to mention in your title that your study only focused on the earthquake-generated tsunamis. - Introduction: Please include geographical information of the study area such as average land elevation, bay shape, coastal defense facilities (seawalls, breakwaters), etc. You may also mention roughly the tsunami height

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by the two major historical events. You should better state clearly the objectives or final goals/expected results of this study. - WCTSA: I suggest to move this section after section 3. After you review both earthquake and landslide sources - The selected tsunamigenic sources: I suggest to make use of bullets to separate earthquake and landslide sources. You may then add the explanations similar to your conclusion for the reason why you did not consider landslide generated tsunami. - Tsunami simulations: What is the tidal range in the study area? Tsunami hit during the high tide probably cause larger inundation extent. What are the heights of seawalls and breakwaters in the study area? Effect from with and without these coastal defense structures is also interesting. This is to see for the worst case if these structures were totally destroyed and might cause higher tsunami impact. - In my opinion, similar figures such as Figs 5,9,13, Figs 6, 10, 14 and Figs 7, 11, 15 should be put together for better virtual comparison and reduce the space. - Exposure and vulnerability and building damage assessment: Please consider to move the first paragraph of these two sections to the introduction part as data and method part and only focus on your own results. - Because you have the simulate flow velocity, you may apply this recently published works for the assessment of marine vessels based on the actual damage data from the 2011 Japan tsunami. By doing this, you can also make an onshore tsunami hazard map for fishing boats. Muhari, A., Charvet, I., Futami, T., Suppasri, A. and Imamura, F. (2015) Assessment of tsunami hazard in port and its impact on marine vessels from tsunami model and observed damage data, Natural Hazards (Published online) Suppasri, A., Muhari, A., Futami, T., Imamura, F. and Shuto, N. (2014) Loss functions of small marine vessels based on surveyed data and numerical simulation of the 2011 Great East Japan tsunami, Journal of Waterway, Port, Coastal and Ocean Engineering-ASCE, 140 (5), 04014018. - Although the project SCHEMA has modified the damaged building data surveyed in Indonesia to the European standard, could you please add some explanations for an argument that even in the Europe and adjoin region, the building properties should be different. Or in SCHEMA has modification for all countries in the region? - Building damage analysis: I suggest to use bullets to separate the explana-

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tions of each step. Again, I feel that the first paragraph is more proper as introduction.

- What kind of image you used for the visual building inspection and their photo taken date? Please also make one figure showing examples of building image in your study for each class. Please consider making use of Fig. 20 to create a building damage map by plotting the expected building damage state of each cell. I believe that will be very useful for the local government or any planners.
- Population exposure analysis: The first and second paragraphs may better move as introduction of the data and method.
- Fig. 17: Please draw the coastline
- Conclusion: I suggest to add some comments on the specific critical facilities even though the study show that the impact is minor. You may say that based on this study conditions, xxx plant might be affected that by xxx tsunami.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 5085, 2015.