Nat. Hazards Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/nhess-2019-186-AC1, 2019

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Tectonic Origin Tsunami Scenario Database for the Marmara Region" *by* Ceren Ozer Sozdinler et al.

Ceren Ozer Sozdinler et al.

cerenozr@cc.kagawa-u.ac.jp

Received and published: 15 October 2019

We thank referee for his/her comments and contributions in improving our manuscript. Below are our answers to each comment. Due to the fact that the manuscript has been subject to a major revision in the real sense, we would like to ask the reviewer to have a fresh reading of the revised manuscript which probable is more mature in terms of addressing the limitations and uncertainties in the study.

1) Line 27 at page 3: The sentence is long and not clear. Please consider to write two sentences. The sentence was rephrased as: "The total earthquake moment for each scenario is derived from the summation of the moments associated to the individual segments considered to be ruptured in a given scenario."

Printer-friendly version

Discussion paper

2) Line 30 page 3: It is not clear if the “arbitrary manner” means “randomly”. If not please explain the “logic” the authors used to assign the slip values. It means randomly.

3) Line 20 at page 5: Please write a reference for the 25 cm threshold. Is this the lower limit to consider the scenario in the Database? Please explain it. Thanks for the correction. This section was totally revised.

“The maximum wave amplitudes less than 75 cm were coloured with green as a representative of relatively safer coastal zones of Marmara Sea. Several experimental and numerical studies in literature prove that 30 cm inundation depth can be accepted as threshold for critical water level that has potential to cause a person to fall down (Jonkman and Penning-Rowsell, 2008; Takagi et al., 2016). So, according to the distribution and relation between the maximum wave amplitudes calculated at gauge points in the sea and inundation depth values calculated on land, the value of 75 cm wave amplitude was decided as to define relatively safer coastal zones.“

Reference list was also updated including these two references.

4) Table 1 at page 6: Please write in the caption (or in the text) the meanings of the acronym SSF, NF, NSSF, RSSF, RF. The definitions of fault types were added in the caption: “SSF: Strike-slip, NSSF: Oblique Strike-Slip fault with normal component, RSSF: Oblique strike-slip fault with reverse components, NF: Normal Fault, RF: Reverse Fault”. We moved this table to Supplementary Material taking into account of comments from other referees.

5) Table 2 at page 7: Please write the units (m ?) of the displacements. The unit of displacements is added in the caption: “Displacements in meters assigned to fault segments for 30 scenarios to be used in tsunami modelling”. We moved Table 2 to Supplementary Material taking into account of comments from other referees.

6) Figure 2 at page 8: It is really difficult to see the differences between the SN subplots. May be a larger figure in the landscape pdf could help.

This is a common comment from all referees. We updated this Figure by removing the topography from base map and inserting a simpler basement.

7) Table 4 at page 11: It is not clear why only the values of the maximum wave amplitude above 0.75 m are shown and the values below 0.75 m are considered negligible, when the critical water level was indicated as 0.25 m at page 5.

This section was clarified with the explanations added between Line 1 and 14. “The synthetic gauge points along the coasts of Marmara Sea were first selected with very sensitive analysis so as to locate them in shallow zone at water depths less than 50 m. We basically considered the locations of industrial facilities, residential areas, harbors, marinas, factories and six Tsunami Forecast Points (TFPs) while selecting those gauge points (TFPs are synthetic gauge points located at Marmara Eregli, Haydarpasa, Yalova, Mudanya, Erdek and Degirmencik, where the arrival time of first wave and tsunami alert level are calculated and included in national tsunami alert messages disseminated from Regional Tsunami and Earthquake Monitoring Center in KOERI; see Figure 3. There are additional 42 TFPs along the coasts of Turkey in Black Sea, Aegean Sea and Mediterranean Sea). After the selection of synthetic gauge points, test runs were performed in order to identify the water depth where NAMIDANCE located each gauge point as the software assigns each synthetic point at the nearest grid node in bathymetric and topographic data. In other words, although gauge points were selected in the sea within the shallow zone less than 50 m water depth they may be relocated on land or at locations deeper than expected due to the input principles of NAMIDANCE. For that reason, test analyses are critical to validate that synthetic gauge points are located in shallow zone at the possible shallowest location. After these validation analyses, the total number of 1333 gauge points were defined, most of which were located at the water depths of less than 10 m (water depths at some of the gauge points are higher than 10m due to steep topographic conditions at some regions). It is noted that the northern part of the area has much more critical locations than the southern part; therefore, gauge points in that region

are denser than the southern part of the Marmara."

Please also note the supplement to this comment:
https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2019-186/nhess-2019-186-AC1-supplement.pdf

---

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2019-186, 2019.

Printer-friendly version

Discussion paper