

Interactive comment on “A Homogeneous Earthquake Catalogue for Turkey and Surrounding Region” by Onur Tan

Anonymous Referee #1

Received and published: 21 November 2020

The manuscript provides an earthquake catalogue. According to the title the earthquake catalogue refers to Turkey and Surrounding Region for the instrumental period 1900-2017, which could be of interest to geoscientists. But, the assessed region is too large, including many, event not neighboring to Turkey countries. It is strongly suggested to provide the earthquake catalogue of Turkey (and close surroundings) and not of other neighboring or countries with different seismotectonic regime, such as Albania, Romania, Greece, Syria or Iraq.

Of course, given that the area must be restricted all numbers and percentages mentioned in the manuscript must be updated.

A description of the seismicity map taking into account the seismotectonics is missing. Which are the most seismically active regions and why?

C1

Another question is if the catalogue is really compiled in order to be used in seismic hazard studies, as stated by the author several times. Are the different magnitude scales and the Institutes that calculated the magnitude needed for such studies or by civil engineers? The answer is rather negative. So, the author should analyze the advantages of the proposed catalogue.

Another major issue is that the use of the English language is problematic. The proper use of English language is required. The author should pay attention and be sure to avoid obvious mistakes. Certain points have been corrected but a person with experienced knowledge of the English language should check and correct the manuscript.

Detailed comments, corrections and additions are included, mainly as sticky notes, in the pdf file: nhess-2020-368_reviewer_1

Some of the main comments (also included in the .pdf file) are: 1. Title and region: The title of the paper is not consistent with the selected region. The selected region (32° - 47° N, 20° - 52° E) is too large and not represented by the term “Turkey and Surrounding Region” of the title. It includes all the Balkan countries (e.g. Albania, Bulgaria, Greece, Serbia etc), Caucasus and Arabian countries, a totally inhomogeneous area. This is not “Turkey and Surrounding Region”. I strongly suggest to restrict the study area to what the title says, i.e. to the following region: 35° - 44° N, 25° - 46° E.

2. Lines 39-40: “but it cannot be proved this type of man-made faults” What do you mean? Inappropriate use of the English language. Rephrase and explain what you mean.

3. Line 42: “At this point, essential of a homogenised catalogue with a common magnitude arises.” What do you mean? Inappropriate use of the English language. Rephrase and explain what you mean. Many other similar cases have been marked at the pdf file.

4. Lines 88-89: “and location procedure that is recently used by the ISC is implemented

C2

to all data.” It should be “a location procedure”. The author should briefly describe the location procedure.

5. Lines 104-107: “In turn, ISK (Kandilli Observatory and Earthquake Research Institute, KOERI) and DDA (General Directorate of Disaster Affairs until September 2017; Disaster and Emergency Management Presidency - AFAD after October 2017), which are the national seismological networks in Turkey, are selected.” This is not rational for the huge area selected. Why use the ISK or DDA solution for an event that occurred in Bulgaria or Greece? This selection would be valid if the catalogue was restricted to Turkey, as proposed.

6. Line 116: “On the other hand, we have no evidence for that an institute calculates true magnitude for an earthquake.” There are several sentences like this one in the manuscript (e.g. the interested area). All these should be rephrased. The proper use of English language is required. The author must pay attention in order to avoid such obvious mistakes.

7. Line 123: “These limits cover an event that occurred 350 km away from Turkish borders”. This is not true. The distances from Turkish borders reach or even exceed 500 km and this has to be changed.

8. Lines 125-126: “The study area also covers the Balkans, Black Sea, Caucasus, Syria, northern Iraq and northwest of Iran. The final catalogue contains 697,139 events occurred in the period from 1900 to the end of 2017.” There is no reason to include such a huge and inhomogeneous area. It must be restricted (e.g. to 35° - 44° N, 25° - 46° E). So, all these numbers will change.

9. Lines 137-138: “However, the rate runs up to 6% only in 2010 and 2011 because ~5000 events without a magnitude are reported by the TIF (Georgia) for the Caucasus earthquakes.” Why do you need earthquakes from Georgia and Caucasus? These problems will disappear by changing the study area.

C3

10. Lines: 139-140: “The earthquakes with no magnitude assigned are also included in the catalogue to be useful in future studies.” I strongly disagree. The author claims that the proposed catalogue will serve for seismic hazard studies. It is obvious that earthquakes with no magnitude are totally useless for such studies. Earthquakes with no magnitude assigned must be removed.

11. Lines 160-162: “After declustering, the earthquakes occurred after 1980 are selected because the national station networks and data analyses procedure become much more reliable in Turkey.” Again, this is not rational for the presented catalogue. It will be correct to do this, only if the catalogue is restricted to Turkey. Why should 1980 be correct for Georgia, Albania or Cyprus? The region must be restricted to Turkey (e.g. to 35° - 44° N, 25° - 46° E).

12. Lines 273-275: “The contour map given in Fig. 8 shows that the homogenised catalogue is complete down to M_w^* 3.0- 3.2 in Turkey and 3.2-3.3 in Greece. M_c increases dramatically up to 4.0-4.5 in the Caucasus and its abrupt transition follows the eastern border of Turkey” All the values referring to Greece and Caucasus will be removed if the catalogue is restricted in Turkey, as stated in the title.

13. Lines 287-288: “Unfortunately, the importance of a large number of parameters and their uncertainties in a catalogue are missed, and the given datasets less useful for the studies other than seismic hazard analyses.” Apart, from the incorrect use of the English language in this sentence as well, which is a major disadvantage of the submitted manuscript, it has been stated several times that the main scope of the compilation of the proposed catalogue is to use it in seismic hazard studies. Now the contrary is implied, i.e. that other catalogues with less parameters are (which I believe is indeed the case) sufficient for seismic hazard studies. What is the case according to the author? Please clarify.

Please also note the supplement to this comment:
<https://nhess.copernicus.org/preprints/nhess-2020-368/nhess-2020-368-RC1->

C4

supplement.pdf

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-368>, 2020.