Revisor #1

The ms describes the features of the accelrometric data in Eastern Turkiye. Authors had compiled low magnitude events in their dataset. The paper is well-written and can be accepted however some minor revisions are required.

Thank you for your time and willingness to read our manuscript. You can find the requested additions highlighted in yellow in the new version of the manuscript.

Section3.1.1: What is the definition of "error"?

In this work, we can distinguish 3 types of error, derived from the outputs of the NLLoc (Non Linear Location) algorithm (see Lomax *et al*., 2000). These errors are:

- Horizontal error;
- Depth error;
- Root Mean Square (RMS) error.

In the NNLoc algorithm, the errors in the observations are assumed to be Gaussian.

The horizontal error quantifies the uncertainty in the earthquake location within the horizontal plane since is the projection of the ellipsoid onto the horizontal plane, typically represented as the semi-major and semi-minor axes of the projection. This error is expressed as a confidence region in the horizontal plane, indicating the area where the earthquake is likely located with a specified probability.

The depth error measures the uncertainty in the vertical position of the earthquake hypocenter and is taken directly from the vertical axis of the error ellipsoid. Both horizontal and depth errors are affected by several factors, as geometry of the seismic network, accuracy of travel-time measurements and complexity of the velocity model.

Finally, the RMS error is a measure of the fit between observed and computed travel times for the final earthquake location, as expressed in the Eq. 1 of the manuscript.

All these outputs combined allow seismologists to assess the reliability of the earthquake location in terms of both spatial precision and the quality of the model-data fit.

We have added some of these considerations in section 3.1.1 of the revised version of the manuscript.

Could you plot the difference between your estimation and AFAD's in terms of distance between epicenters (e.g. depth was compared in Section 3.1.2).

The AFAD catalog contains any information on the location error and unfortunately makes reproducibility impossible. What we can do instead is to plot the empirical Cumulative Distribution Function (CDF) that directly compares the location of each event, computing the distance between the location obtained in this work and the one provided by the AFAD catalog, as shown in **Fig. 1_Rev#1.** The distance is computed through the haversine formula (see Robusto, 1957), that determines the great circle distance between 2 points on a sphere given their longitudes and latitudes.

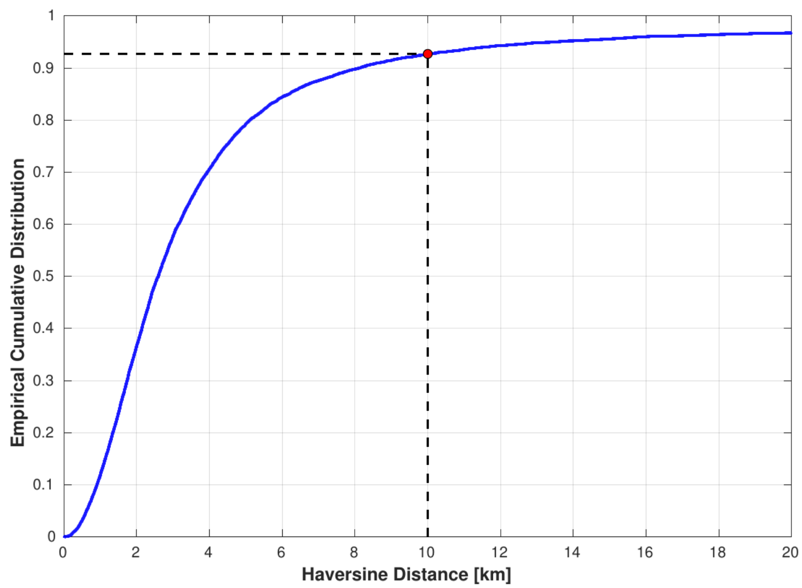

Figure 1_Rev#1: Cumulative Distribution Function (CDF) with the Haversine distance computed between the location obtained in this work and the one provided by the AFAD catalog. Black dashed line shows the distance at 10 km, corresponding to the 92.7% of the CDF (blue curve); red point shows the intercept.

As we can see from the Figure above, the CDF shows that about 80% of the entire data set has a difference in distance in the catalogs of 5 km, 92.7% are below 10 km (the intercept is represented by the red point) and almost the entire data set (above 97%) below 20 km. This information is a further indication that our catalog has reliable and precise epicenters.

We add this image (Figure 7) and some considerations in the subsection *3.1.2 Epicentral comparison with AFAD catalog* in the revised version of the manuscript.

Figure 7&10: I think side-by-side bars would be more readable instead of overlapping bars.

Ok, thanks for your suggestion. We modified Figures 7 and 10 (now Figures 8 and 11) using two separated figures compared to one figure with overlapping bars.

References

AFAD: Disaster and Emergency Management Presidency. National Seismic Network of Turkey (DDA), International Federation of Digital Seismograph Networks available at http://tdvm.afad.gov.tr/ (last accessed February 2024).

Lomax, A., Virieux, J., Volant, P., and Berge-Thierry, C.: Probabilistic earthquake location in 3D and layered models: Introduction of a Metropolis-Gibbs method and comparison with linear locations, in Adv. in Seismic Event Location, eds. Thurber, C. H. and Rabinowitz, 101-134, Kluwer Academic Publishers, 2000.

Robusto, C. C.: The cosine-haversine formula. The American Mathematical Monthly, 64(1), 38-40, 1957.

Best Regards,

Leonardo Colavitti, on behalf of the authors.

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