

*Referee Report of the article "Computing time-dependent activity rate using non-declustered and declustered catalogues. A first step towards time-dependent seismic hazard calculations for operational earthquake forecasting" (egusphere-2023-2818-manuscript-version2)*

The article is difficult to read. The structure of the material is chaotic. It is recommended to revise the presented material for better understanding of the readers. To work on the text, it may be useful for authors to eliminate the following shortcomings (the list is not exhaustive).

- The article discusses the uncertainty of epicentres, while at the same time seismic faults have no "width" but are defined by lines on the Earth's surface. This approach requires clarification in the text of the article
- Figure 1 - All four panels should be in the same scale. Figure 1c differs in scale from figures a, b and d. It is necessary to correct the parameter-values in the figure with the description in the text. For example, in the model description the parameter "mu" is defined as zero, whereas in Figure 1a it is given as 68.64. Explain the meaning of the colour code in Figure 1. To better understand the method of determining the parameter "mu" from fault locations, consider to add the additional lines to Figure 1. Swap figures 1d and 1c. Axis labelling should be added.
- Paragraph 2.2 lacks a description of the grid spacing used in the analysis. There should also be a discussion of the choice of grid spacing used.
- 188- there is no reference to the section describing the comparison of several declustering algorithms. Для рис 2 не указано какой алгоритм для выделения кластеров был использован.
- OpenQuake or Openquake use a single caption
- 299 – 304 The sudden mention of the NN method when discussing the results of the 3 already selected declustering methods is not clear.
- Fig 9 AF – is an abbreviation for Algorithm A? How do the data for Algorithm A from Fig. 9 and Table 6 agree, where 3394 events are listed for the Lorca series? The huge discrepancies between method A and the other two cluster extraction methods remain uncommented on in the article text.
- The data in Table 9 refers to Table 9. What is meant by this?
- For the Italian catalogue, calculations are from 2005. It is not clear why Table 3 data is given.

- For the catalogue of Spain, Calculations are made from 1990. It is not clear how the catalogue data from 1396 (and in Table 7 from 1048) are used in the calculations.
- For the neighbourhood of the L'Aquila earthquake and calculations in the vicinity of the epicentres of the three events in Spain it is not specified how the sizes of these neighbourhoods are chosen ? 200x200 cells - the regular grid cell sizes should be specified in km since the parameter of the epicentral uncertainty is specified in kilometres.
- In Figure 14 and Figure 15, the differences in the models shown are indistinguishable. A different presentation of the material should be chosen to demonstrate the convergence (or difference).
- 429 "Model 1" - which model is this referring to?
- 441- 442 The sentence needs to be rewritten as PSHA - Probabilistic Seismic Hazard Analysis cannot be "high in the region..." or "continuous increase...".