

We would like to thank the anonymous reviewer for their suggestions. We responded to the main comments point by point and considered almost all of the minor and specific suggestions. We have also modified Figures 4 and 10 as requested.

## General comments

The paper brings a new insight into consequences of 5 May 1990 Potenza earthquake. The new analysis of the existing datasets, with the addition of new primary sources, shows an updated picture of this damaging event. Bringing hydrological effects into the picture allows us to have an additional insight into the earthquake effects in the wider epicentral area.

Please spell-check the text carefully, using UK English for all used terms.

The date format: the use of the scientific date format is recommended (DD Month YEAR) in the entire paper.

We have modified the data and we have carefully checked the terms used.

## Specific comments

Site vs. locality: I have been researching the use of both terms, and it seems that there is no consensus which one is more proper for naming an inhabited place. Several sciences (e.g. archaeology, palaeontology etc) use these terms not as synonyms, but as a definition of the size of the examined area. In my head locality relates to man-built habitations, and a site can be just anything, from *a camp site* to *intended site for a new shopping mall*; but it's not necessarily true. However, I suggest that the authors read the text again and unify the use of the chosen term.

We agree with this comment. No specific definition is provided to differentiate between the two terms. For this reason, we have adopted the definition of 'locality' from the latest version of the Italian Macroseismic Database (DBMI15) ([https://emidius.mi.ingv.it/CPTI15-DBMI15/description\\_DBMI15\\_en.htm](https://emidius.mi.ingv.it/CPTI15-DBMI15/description_DBMI15_en.htm)), replacing all the terms 'site' with 'locality' in the manuscript.

The title of the paper: as the earthquake in focus is being referenced as Potenza earthquake throughout the text, this name should be used in the title, too. Consider changing it into "A thorough review of the 5 May 1990 Potenza (Southern Italy) earthquake: constraints from macroseismology and insights from hydrology"

We have modified the title as suggested.

Epicentral intensity  $I_0$  should be written with zero as subscript (see [https://gfzpublic.gfz.de/rest/items/item\\_4011\\_4/component/file\\_4012/content](https://gfzpublic.gfz.de/rest/items/item_4011_4/component/file_4012/content)).

Ok, modified.

When seismologists talk about all sorts of things that can be felt and/or leave a trace on the seismograms, they are named as events. However, when we talk of a known earthquake, to avoid any possible confusion, it's called an earthquake and not an event.

We used the term "event" to avoid repetition in the text. Several recent articles used "event" as a synonym for "earthquake", even though this is known (i.e., D'Amico et al., 2025; Sbarra et al., 2023; Vannucci, 2024).

Line 8 and further in the text: just out of curiosity, is the precision with which intensities are evaluated enough to allow us expressing the  $M_w$  with two decimal places?

The BOXER method computes the macroseismic magnitude by combining epicentral intensity and the isoseismal areas of each intensity class using an intensity prediction equation. Macroseismic magnitude (M) is computed as the weighted average of values obtained independently from each intensity class through the equation. For this reason, it is expressed with two decimal places (see Gasperini et al., 2010, for further details).

Line 13: “intensity values”. It should be clarified, here as well in the rest of the text, that the authors are talking about macroseismic data points (MDPs). Please check and correct all the places it applies to (line 50 and forward). It is a good place to explain what MDPs are, as the abbreviation is used already in Fig. 1 and explained only later in the text.

In line 11 of the track changes manuscript, we simply refer to the numerical value of macroseismic intensity. We have added “macroseismic” to this part to clarify this point. In general, a macroseismic data point (MDP) represents the intensity value associated with a specific locality with its name and coordinates, referred to a given event. We have carefully checked the use of “MDP” and “intensity value” terms, adding the term 'MDP' where we refer to the final dataset.

Line 56: consider replacing “provoked a very large perception” with “was widely felt”

Ok, modified.

Figure 1: MDP – already mentioned. Data points with I<sub>max</sub> are not visible in the maps. Consider adding the number of I<sub>max</sub> data points and the I<sub>max</sub> intensity in the caption.

We have included the number of localities and their I<sub>max</sub> for both studies in the caption of Figure 1.

Line 84: Sentence starting with “This methodology involved sending...” should be translated from Italian in a more precise way.

Ok, modified.

Line 112: abbreviation GOM24 is not explained

Ok, we have added the explanation of GOM24.

Figure 4: absolutely not readable, at least in the pdf I am working with.

Consider changing “damage and effects on the environment” to “buildings and nature”.

We have created a clearer version of Figure 4.

Line 146: Guidoboni et al. (2007) not in the References

Ok, added.

Line 164: Consider replacing “we assessed a total of 1393 new intensity values, which were compiled from a careful” with “a total of 1393 MDPs were assessed, as a result of a careful”.

Ok, modified.

Figure 6. Caption should read “distributions for 5 May 1990 Potenza earthquake in the...” or something similar.

Ok, modified.

Line 179: The last sentence needs a bit more details, at least 1-2 sentences describing very shortly what those 2 papers are about.

We have added a sentence at lines 192-194 of the track changes manuscript to provide a clearer description of the cited authors' perspective.

Line 195: “In two localities” – name them.

We have added the name of the two localities and we have reported their location in Fig.1a.

Line 202: consider replacing “the new assessment is” with “the intensities assessed in this study are”

Ok, modified.

Table 1. Consider adding another column with I<sub>max</sub>.

We have added an I<sub>max</sub> column to Table 1.

Line 225: instead of “see Section 2” there should be “see Figure 4”, I presume?

Yes, modified.

Figure 10: the background of the map is too dark and does not allow the tiny font to be readable

We have created a new version of Figure 10 with a light grey background.

Line 237: Hydrological Annals – not in the References

We have added “Hydrological Annals” to the “Data availability” section of the manuscript.

Line 241: consider replacing “To further constrain” with “In order to constrain further”

Ok, modified.

Line 254: replace “effects respectively” with “effects, respectively”.

Ok, modified.

Line 255: the section gives good overview of the paper, but there’s not much discussion.

We have changed the name of the chapter to “Conclusions”.

Table S1: could you, instead of the category NC, differentiate the effects more and use the descriptive terms F (felt), damage (D) etc, as suggested in

[https://emidius.eu/MIDOP/manual/input\\_data\\_preparation/input\\_data\\_table\\_formats.php](https://emidius.eu/MIDOP/manual/input_data_preparation/input_data_table_formats.php) ?

We have followed the guidelines reported in the MIDOP manual and opted to assign the descriptive code NC (not classified) rather than “Felt” or “Damage”. As stated in Lines 213-2115 of the track changes manuscript, this is because for some localities, there was insufficient information in the source to describe the effects for some localities. This definition is also given in the table of the MIDOP manual table that lists “Unconventional macroseismic descriptive codes”.

Line 267: rephrase the sentence starting with “We compute”. Are you talking about the intensity assessment of the MDPs or the calculation of the focal parameters?

We estimated the macroseismic parameters (see Table 1) using MDPs on the MCS and EMS-98 scales. We have added a reference to Table 1.

Line 283: “in March 2025” – date? Where?

We have added the details of this earthquake.

## Appendix A

WGS84 not explained

Lat – add °N

Lon – add °E

A: add ING

We have considered all of these suggestions.

## Technical corrections

Figure 4: absolutely not readable, at least in the pdf I am working with.

Figure 10: the background of the map is too dark and does not allow the tiny font to be readable

Line 239: replace “kilometers-slightly” with “kilometres – slightly

We took into account all the technical corrections suggested.

## References

D’Amico, S., Tuvè, T. & Mantovani, A. New relationships between macroseismic intensity and local magnitude for the volcanic region of Mt. Etna (Italy). *J Seismol* 29, 305–315 (2025).

<https://doi.org/10.1007/s10950-024-10274-9>

Gasperini, P., Vannucci, G., Tripone, D., and Boschi, E.: The Location and Sizing of Historical Earthquakes Using the Attenuation of Macroseismic Intensity with Distance, *B. Seismol. Soc. Am.*, 100, 2035–2066,

<https://doi.org/10.1785/0120090330> , 2010.

Sbarra, P., Burrato, P., De Rubeis, V., Tosi, P., Valensise, G., Vallone, R., and Vannoli, P.: Inferring the depth and magnitude of pre-instrumental earthquakes from intensity attenuation curves, *Nat. Hazards Earth Syst. Sci.*, 23, 1007–1028, <https://doi.org/10.5194/nhess-23-1007-2023> , 2023.

Vannucci, G.: Analysis of the macroseismic cumulative damage in the seismic sequences in Italy. *Bull Earthquake Eng* 23, 759–778 (2025), <https://doi.org/10.1007/s10518-024-02073-x>