

## ***Interactive comment on “A scoring test on probabilistic seismic hazard estimates in Italy” by D. Albarello et al.***

### **Anonymous Referee #3**

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The paper is well organised and presented and has interesting conclusions.

Although numerous, the comments are in general "minor", mainly claiming more clear explanations in some aspects.

#### **\*\*\* Conceptual comments:**

Introduction (first lines of page 5723 and also lines 15-23 of the same page). It seems that the authors relate the aleatory uncertainty with the lack of information, this is not correct, which is not probably what they want to mean. The aleatory uncertainty (better if termed "aleatory variability") is the event-to-event variability, it is a consequence of the unpredictable nature of earthquakes, it is not due to lack of information, in other words, it cannot be reduced by collecting more data, it could be more precisely defined, but

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not necessarily reduced. On the contrary, the epistemic uncertainty is that about the true state and can be reduced by having a deeper knowledge. I think that both types of uncertainty should be more clearly distinguished.

p 5724 line 10, I would not employ the term "complementary", since the usefulness is not bidirectional. As I understand it, the "ex-post" calculations are employed for testing the PSHA, but not the other way round.

p 5726 For equation (4) and subsequent ones, I suggest indicating explicitly all the dependencies, this helps the understanding of the equations coming after this one (i.e. eq (8)).

p 5732 line 23, when it says "at the sth site (see above)", one can think that there are only two sites (Modena and Potenza, the ones cited at the beginning of that same page), but in the results later on we see there are more sites. Maybe a rewording is needed.

P 5733 lines 4-10. I am missing a more familiar explanation of what is being done. A PSHA provides results for a combination of probability + exposure time, not only exposure time as it seems to be indicated in line 6, and this pair of data is usually summarized with a "return period". For instance, for a probability of 10% in 50 years, we would refer to a return period of 475 years, but for that same return period we could refer to an infinite number of pairs probability + time exposure. In this case, from this infinite number we calculate the probability for the exposure time of interest.

#### **\*\*\* Issues having to do with the English (probably not comprehensive):**

- "on purpose" is employed more than once, but I think it probably means "for this purpose" or "for this goal", while "on purpose" rather means "deliberately" (which I do not think it is the case here).

- P 5723 line 2, as I understand it, I think that "last" should be replaced by "latter".

- p 5724 line 12, there are two "only".

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- p 5726 line 14, is there a missing "if" after the parenthesis?
- p 5728 line 13 "A type soil", I normally refer to it as "soil type A", there are more constructions like this one later on.
- "by following", employed several times, in some cases could be "as per", "according to" or other that sounds better.
- Eurocode EC8 is redundant, first time you mention it you can say Eurocode (EC) 8, and the just EC8. The reference is missing.
- p 5729 line 9, I suggest "In relation with" instead of "About", and then something like "12 out of 71 stations have no records...".
- p 5730 line 16 "municipalities entered into regulation. . ." the sentence needs rewording.
- p 5731 lines 24-26, needs rewording, not clear.
- \*\*\* References: - p 5724 line 6, when citing the SSHAC document, I suggest citing also NUREG 2117, since they go together nowadays.
- p 5733 lines 26-26, needs rewording.
- p 5734 line 20, review citation of Akinci, it is not "et al" if (2010)
- p 5735 line 12, review citation of Akinci, it is not "et al" if (2013)
- The SSHAC document is published by the NRC, the reference should say something like "NRC (1997)"
- EC8 reference is missing.
- web sites can be included in the references (INGV research results and SHARE).

\*\*\* Figures

Figure 1. Caption. "Pacor et al" (not "at al"). Instead of "plusses" say better "crosses".

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Figure 2. Better if the figure is north oriented, it is really weird to see Italy "horizontal". As of the caption: "represent" (extra "s"); the consideration on "soil type A" made above also applies here.

Figure 3. I think that the description of symbols applies to both, a) and b). Make the plots bigger.

Figures 6 and 8. Difficult to distinguish anything. I suggest making the maps as big as possible.

Figure 10. Make the plots bigger.

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