

Interactive comment on “Difficulties in explaining complex issues with maps. Evaluating seismic hazard communication — the Swiss case” by Michèle Marti et al.

Anonymous Referee #2

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[1] The paper “Difficulties in explaining complex issues with maps. Evaluating seismic hazard communication – the Swiss case” by Marti, Stauffacher and Wiemer, deals with the evaluation of maps as a tool to communicate seismic hazard. The maps are composed according to a set of recommendations / conditions that improve map readability and comprehensibility. The evaluation is based on the analysis and interpretation of the answers provided by different target groups to a questionnaire specifically created for this work and adapted to the Swiss case. The paper is well written, rises pertinent and interesting research questions about hazard communication and mapping features. The methodological approach to collect data followed seems adequate. Although a form with 25 questions may involve multiple analyses, the authors focus on

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some specific points (INCLUDE) that lead to their key conclusions. In my opinion, this paper would be of interest for the readers of NHESS. Summing up, I recommend the publication of this paper after completing minor revisions. [2] I have a major comment on the research setup: A) The large amount of maps (45) used by the authors may hinder the comprehensibility and the ability of the respondents, as they may feel saturated of information. In my opinion, maps are good means to communicate information because they present a visual summary of information that is (or at least, should be) easy to understand. But using tens of maps makes the analysis complicated, as the reader does not distinguish the main message and may get confused by irrelevant (?) information. B) The information represented in the maps should be adapted to the end user. Specifically (and in consonance with the documentation for professionals given in the SED site): - Effects maps are risk (not hazard) maps, related to issues that any person (with any background) can observe. They are suitable for any end user. - Hazard maps are developed for rock condition (i. e. excluding site effects that could amplify ground motions) and thus give a incomplete view of the actual expected ground motions. Only specialized people (eventually including architects and engineers) would interpret these maps correctly. - Magnitude maps are basically seismicity maps, not hazard maps. I think these maps are not adequate to evaluate seismic hazard communication. I understand that the authors focus the analysis on whether the best-practice recommendations followed to elaborate the maps do facilitate hazard communication to end users. From this point of view, I have no concern with the paper. However, these points are determinant for the interpretation of results and the conclusions. Perhaps the use of a smaller amount of maps and the mapping of more user-oriented variables would lead to different conclusions. In my opinion, the issues commented in this point [2] should be included in the paper. [3] Below I provide some specific comments to the paper: 1. Introduction Lines 12-13: the usefulness of hazard maps for earthquake resistant design is mentioned as the most efficient way to reduce earthquake risk. . . this is valid for recent and new construction. Any comment on older (pre- seismic code) constructions? Line 17: the authors state that hazard maps “often the only accessible

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information to help the public deciding about mitigation measures” and give examples in Fig. 1. There are many examples (from the countries which maps are shown in Fig. 1 among others) of other “accessible information to help people. . .”, maybe not maps. I would suggest this rephrasing “a principal source of information to help the public deciding about mitigation measures”. 2. Best practices in communicating seismic hazard Subsection 2.2.1, line 7: I think you should add “for non-experts” at the end of “Whenever possible, technical vocabulary should be avoided” 3. Case study and focus of research Subsection 3.1, lines 25-28. Note that the hazard map is expressed in terms of acceleration and that the effects and magnitude maps are expressed in terms of probability. This may cause some confusion to the respondents. Would it be better understood an “effects (or magnitude) map” depicting the expected EMS intensity (magnitude) value for a given return period? This should be included in the discussion. Subsection 3.2, lines 20-21. The authors state “we are interested in factors influencing the performance of participants in understanding and interpreting hazard information, such as numeracy skills, age, gender or education”. Please, include in the proper section an explanation about how age, gender or education influence the performance of participants in understanding and interpreting hazard information. (I SEE THAT THIS IS ALREADY TACKLED IN THE RESPONSE TO REFEREE K. WAGNER. FORGET IT). Subsection 3.2, lines 24. Please, explain what do you mean by “and therefore controlled”. This sentence may require rewriting it. 4. Approach It the general public is informed about the meaning of the terms “hazard”, “effects” and “magnitude” before providing the answers? How? 5. Results The first paragraph of this section is a bit confusing. Please, state how many persons of the general public and of architects/engineers constitute the sample used to assess each research question (as numbered at the end of section 3.2). If one of these research questions are answered by both groups (general public and architects/engineers), clearly indicate the differences/coincidences between the answers provided by both groups (if any). Tables: indicate the meaning of abbreviations in some tables (M for mean, SD for standard deviation, etc.) at list in one table (the first appearance). ADDITION: Sentence 425 of the

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supplement to the comment of reviewer K Wagner may be confusing. Please rewrite it.

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