

Reviewer 1

The topic of the paper “HOW AWARENESS AND CONFIDENCE AFFECT FLOODRISK PRECAUTIONARY BEHAVIOUR OF GREEK CITIZENS: THE ROLE OF PERCEPTUAL AND EMOTIONAL MECHANISMS” is interesting but in the current form the article is not very attractive. I suggest to the Authors a shorter, clear and direct way to organise the article, especially because the topic is slightly outside of the expertise of usual readers of NHESS.

We would like to sincerely thank the Reviewer for the constructive comments that intend to help us improve the structure and overall quality of the article.

I suggest focusing on the following points:

1. There is no clear border between the literature and the work done for the paper. The Authors should quote the previous studies mainly into literature review. Currently it is very difficult to understand and distinguish the literature from the Authors opinions and elaborations. It is not to expect that the reader goes through the quoted literature: the article must supply the basic information to follow the discussion.

References to the literature are included in the Introduction, but, indeed, they are concise. The reason for this is that the reports were chosen to be more analytical when developing the hypotheses of the flood-risk precautionary behavior model -hereinafter FPB. Taking into account the reviewer's observations, we will proceed to reorganize the 'Introduction' and 'Model specification and hypotheses'. In particular, the first part of the introduction will provide a more detailed literature review. On the other hand, the 'Model specification and hypotheses' will be more focused on the conceptual framework of the model, while a new Table will contain information on the model variables-definitions-indicative references with regard to the effects on (or relationship with) flood preparedness (+, -, or insignificant effect) found. The Table will state (with text following the citation) whether the specific variables has been previously studied as it is, or is model-specific, inspired by the reported references.

2. The paper needs to be rearranged in a more scientific way, introducing definitions of all the variables and clarifying the meaning of each variable in this specific article. This should be applied for example to page 2, line 35-40. Authors should talk of the two entities separately, not using a prosaic comparison and writing their name more than once (Current preparedness= xxx. Preparedness intention= yyy).

On the basis of the previous comments, 'Model specification and hypotheses' will be rearranged. As we proposed, a new Table will include the model variables, definitions and relevant citations. Moreover, we propose a more detailed explanation of the variables constructs to be given in section3 'Method'- Measures. In addition, in section 3 'Method'- Measures, new Tables will be dedicated to the multi-item variables such as preparedness, risk perception & risk communication, presenting the survey questions and the relevant items. Table A1 will be homogenised and will include descriptive statistics for each variable.

3. Structure and graphic design of tables and figures currently are scarce and this affect the global quality of the paper.

We believe that the addition of the Tables we have already proposed will give the article clarity and will help the reader throughout the text. We also believe that Figure 1, which presents the model graphically, follows the standards of models' conceptual illustration, as seen e.g. in Poussin et al. (doi:10.1016/j.envsci.2014.01.013), 2014 and Wachinger et al., 2013 (doi:10.1111/j.1539-6924.2012.01942.x). However, comments and suggestions are welcome.

4. Introduction needs a concise and direct description of paper objectives, because currently is difficult to comprehend.

Following the reviewer's suggestions we will enrich the final part of the Introduction to better present the objectives of the study. Thus, we will further explain that the aim of this study is to explore and understand within a structured context the underlying causes of flood preparedness and to offer new evidence for the implementation of awareness-raising campaigns targeted at citizens to promote individual precautionary behavior. In addition, we will set out specific objectives in the same paragraph. In particular, to ensure a broad picture of precautionary behavior, both the current flood preparedness and preparedness intention are included in the FPB model. As the need for increased resilience of societies to floods is ongoing, a continuous individual preparedness and renewal of protection measures is also required. Therefore, the research question is whether prior adoption of measures influences the willingness of citizens to invest in future measures, and whether current preparedness and intention are guided by different behavioral mechanisms. As evidenced by the literature review, the relationship between the current preparedness and preparedness intention has not been adequately studied.

5. The abstract is not very explicative and in the current form, it is not easy to understand if the results obtained are consistent or not.

Following the reviewer's suggestion, the abstract will contain more explicative information. In particular, apart from the mediating effects of risk perception and worry on preparedness variables – which are the main objectives- we will include information about the direct effects of the predictor variables (awareness-raising and confidence-related factors) on preparedness. We believe that the reference to the structural equation modelling (SEM analysis) is an adequate proof of the overall scientific quality of the study.

6. Sections 2.2 and 2.3. If Authors eliminate the repetitions and go straight to the sense of the variables, the reader can understand the meaning. The Authors should make an effort to find a clear DEFINITION of each of the variables, moving the exaggerate number of reference in a specific column.

As previously mentioned, we propose for Section 2 to focus on the model specifications and gather the information about the variables in a specific Table (with columns: variables-definitions-citations and signs of effects found). Literature review will be transferred to the Introduction section, while details regarding the variables construction will be limited to the Method-Measures section.

7. Authors should describe variables and model separately. Currently, the model has no name and I did not found a paragraph describing it in an exhausting way.

Following the previous comments made by the Reviewer, Section 2 will introduce the model and present the conceptual illustration, while the variables will be gathered in a Table (with columns:

variables-definitions-citations and signs of effects found). Details regarding the variables construction will be limited to the Method-Measures section. The model explores individuals' Flood-risk Precautionary Behaviour, thus the acronym given will be FPB.

8. The core of the paper is the appendix 1, that the Authors. It is not homogeneous, contains formulas "described", questions, a lot of inverted commas and references, without reporting the meaning of the different values that the variables can assume. How the reader can understand the results if these elements are missing? For page 3 and for the appendix, I suggest a clear and definite table. It must be clear when the Authors: a) used a definition existing in literature, b) when they modified it and (above all) c) what is the definition, possibly using a scheme repeating for each variable.

As explained in the previous answers to the Reviewer, Table A1 of the Appendix will be limited to the statistical description of variables. A new Table with definitions and relevant sources will be added in Section 2 (Model specification and hypotheses). In addition, in section 3 'Method'- *Measures*, new Tables will be dedicated to the multi-item variables such as preparedness, risk perception & risk communication, presenting the survey questions and the relevant items. These tables will summarize the most important elements the reader needs to understand about the nature of the parameters, and will greatly assist in comprehension of the model and results.

Finally, we would like to assure the Reviewer that we accept all the specific comments included in the supplementary material (submitted pdf with annotations and highlighted text). More specifically:

Recognizing that the structure of Section 2 is complex and difficult to read, we will proceed to the revisions mentioned above. Section 2 will focus on the model and general conceptual framework, with the relevant graphical illustration. It will also be framed by the above mentioned Table that will contain the variables, definitions and citations, as suggested. Variable constructs will become more detailed at Section 3 (Method-Measures). All the annotations will be taken into account.

In what concerns the comment about the questionnaire (Section 3.1), as mentioned before, we propose the addition of new Tables in section 3 'Method'- *Measures*, that will be dedicated to the multi-item variables such as preparedness, risk perception & risk communication, presenting the survey questions and the relevant items. Table A1 will be homogenised and will include descriptive statistics for each variable. It would be inconvenient to present the entire questionnaire in the main paper. However, we will prepare a supplementary material consisting of the questionnaire and additional information if needed.

It is evident from the annotations in Section 3.3, that the Reviewer expects a full explanation of the measures. Thus, as mentioned above, we will revise accordingly. This section will present in more detail the measures used for the statistical analysis. In this case, in order to avoid repetition, Table A1 will be limited to the statistical description of variables, deleting questions and homogenising the variables presentation.

The comment regarding the statistical method applied will be taken into account. A more detailed reference to the path analysis will be made. However, we should note that other published studies

that apply the SEM-path analysis method are limited to quoting the statistical method (e.g. Terpstra 2011).

Finally, the use of a bullet list describing results for each of the issue analysed will be adopted, according to the suggestion.

Reviewer 2

The paper addresses a significant issue, in the general spectrum of flood risk perception and behavior. The authors examine hypotheses on whether risk perception and worry can mediate the effects of awareness raising and confidence-related factors. Overall, the paper is meaningful and provides novel results useful in the field. Scientific methods and assumptions are outlined clearly (although the manuscript would benefit from a few improvements in this sector).

We would like to thank the reviewer for the overall positive attitude in relation to the topic and the scientific quality of our article. The comments encourage us to improve the presentation of methods and results.

1. Overall, the manuscript would benefit from making clear the boundaries between the introduction - problem presentation - literature review on one hand and approach-methodology-model used on the other. In the way it is currently presented, parts of literature are included in the model specifications and hypotheses (chapter 2) which seems more as an important part of the methodology. In other words, the numerous citations and the literature findings mentioned in chapter 2 can go in the introduction chapter, and the rest of the model and variables description can be part of the methodology.

We appreciate the comments and we intend to adopt part of the suggestions. Therefore, taking also into account the suggestions of the second reviewer (Reviewer 1 in this report), literature findings will be included in the Introduction as part of the literature review. We propose that the model specification remains as a separate section; however it will be more focused on the model, while a new Table will contain information on the model variables-definitions-indicative references with regard to the effects on (or relationship with) flood preparedness (+,-, or insignificant effect) found. The Table will state (with text following the citation) whether each factor has been previously studied as it is, or is model-specific, inspired by the cited studies.

2. I also suggest to the authors, although it is not necessary, to compile a figure that portrays the conceptual model of the study. Visualization would greatly benefit the manuscript. I believe it could facilitate the readers in appreciating the concept of the study more easily. The above steps would clarify significantly the steps followed.

We believe that Figure 1, which presents the model graphically, follows the standards of models' conceptual illustration, as seen e.g. in Poussin et al. (doi:10.1016/j.envsci.2014.01.013), 2014 and Wachinger et al., 2013 (doi:10.1111/j.1539-6924.2012.01942.x). However, we will appreciate any specific comments or suggestions with respect to the overall graphical design and presentation of the model.

Minor issues:

page 1, lines 13-14: please reword to make more clear page 1,

line 21: use "growing exposure of assets" instead of "growing exposure caused by increasing flood-prone assets" page 1, line 23: please rephrase "non-structural policies" as all policies are non-structural initiatives. For instance "non-structural measures and related policies" would be better.

page 1, line 32: I suggest to remove the word negative

page 2, line 13-14: in the same phrase, please clarify whose preparedness is examined. For some readers, it might be clear, but the meaning of the paragraph would benefit from a clarification here.

Page 2, line 16: I suggest using "websites in Greece" rather than "greek websites".

page3, line 14: I suggest using "people to enhance damage prevention efforts" rather than "people to prevent damage".

page 4, line 16: I find the wording "we except that there is a significant relationship" should be avoided.

A wording such as "we investigate the type and significance of relationship" would be better.

page 4, line 36: "in the face of flood threats" rather than "before a flood hazard".

Page 9, line 1: please clarify sentence, or provide a second phrase to clarify

Page 9, line 7: please correct "at el" to "et al."

Page 10, line 6: I suggest the use of "in this case, policy makers should reach" rather than "therefore, policy makers should clearly reach". The suggested phrase is a lighter claim that seems more appropriate.

We highly appreciate the above technical comments. All of them will be revised following the suggestions. With respect to the following minor issues, we think they deserve a more detailed answer.

1. page 2, line 13-14: The use of Bubeck et al 2012 references is not clear. If they suggest the same thing please state this in the phrase.

In his review paper, Bubeck et al. deal (2012) with the perception of risk and precautionary behavior, drawing attention to the differences that arise when the behavior concerns measures already taken (that is current preparedness) and the intention to undertake measures (that is preparedness intention). The authors propose several ways to address the interdependence between current preparedness and preparedness intention. Finally, from an exhaustive list of references, they show that studies have so far studied the relationship between risk perception and either current preparedness or future intentions. They also highlight the low correlations found between risk perception and current preparedness. In our study we decided to study in depth the mediating impact of risk perception on both the current preparedness and the intention to invest in future

measures, precisely to compare and evaluate these two different relationships. As the above is not clear in the text, we will rephrase accordingly, in the context of the revised text.

2. page 3, chapter 2.3. Please add a phrase or two, explaining what mediators are and how mediators act with more clarity.

In the revised text, we will further develop the theoretical background of the model and the role of the variables. Among the improvements will be the more detailed definition of the role of mediators. Risk perception and worry are considered to act as mediators between causal factors and outputs, namely flood precautionary behavior. In particular, the risk perception and worry are considered to mediate the effects of awareness-raising and confidence-related variables on preparedness.

3. page 7, line 1: how much is the marginal positive effect?

The SEM coefficient for the effect of age on current preparedness is 0.02 ($SE=0.006$, $p < .05$). The effect on preparedness intention is statistically insignificant ($p > .05$), based on the threshold set for p -value. We will add the information in the revised text.

4. page 8, line 3-4: family status was also associated in the literature. I believe should be mentioned here to strengthen this finding. (See: Thieken A.H. , H. Kreibich, M. Muller, B. Merz, Coping with floods: preparedness, response and recovery of flood-affected residents in Germany in 2002, *Hydrol. Sci. J.* 52 (2007) 1016–1037. Zaalberg R., C. Midden, A. Meijnders, T. McCalley, Prevention, adaptation, and threat denial: flooding experiences in the Netherlands, *Risk Anal.* 29 (2009) 1759–1778. Dooley D., R. Catalano, S. Mishra, S. Serxner, Earthquake preparedness: Predictors in a community survey, *J. Appl. Soc. Psych.* 22 (1992) 451–470. Papagiannaki et al. (2017) and Diakakis et al. (2018) for Greece findings agree with the family status results).

We totally agree, thus the suggested references will be added here to strengthen this finding.