

## **Referee #1 responses:**

### **Overall comment:**

- **REVIEWER GENERAL COMMENT:** This is a very interesting paper, well-structured and written. The issues addressed are within the scope of NHESS. The construction of the SMC db is of high importance for the analysis of the spatial and temporal changes in the coastal areas vulnerability to floods. Conclusions can be very useful to decision-makers for adaptation planning. The methodology followed for the development of the SMC database is appropriate and well presented. Therefore, the article merits being published, with minor changes.
- **AUTHORS RESPONSE:** Thank you for your flattering and constructive comments. We believe that the results of this work may represent an improvement in the knowledge of the spatio-temporal patterns of floods in the Spanish Mediterranean coast in the last 50 years. We have included all your suggestions in the new manuscript version, this will make the manuscript undoubtedly more robust.

### **Specific comments:**

- **REVIEWER COMMENT:** 1. My only scientific concern is the use of 2 different averaged indices for the average impact severity. I mean, the intensity level is actually related to the impact magnitude: low damages / major / deaths and/or general destruction. Then the authors produce a damage severity index, which uses in the equation the intensity level as weight implemented on the various damages occurrence. I can understand that cases can be compared better based on the severity index. However, I am not convinced about the use of 2 ‘average’ values used to evaluate trends or vulnerability at aggregated areas. What is the point? Maybe this could be better explained.
- **AUTHORS RESPONSE:** We agree with you that the use of two different means can lead to confusion. However, we believe that the comparison between these two indices can help to have a better idea of the problems generated by floods in the study area. We consider that the average intensity is a robust measure, since it limits the accumulated bias of adding several quantitative magnitudes extracted from qualitative information. In addition, the average intensity is based on numerous works that use the three levels of intensity for the study of floods through historical and hemerographic documentation (Camuffo and Enzi, 1996; Barriendos et al., 2003; Llasat, et al., 2005; Barriendos et al., 2014). However, we believe that the severity index provides additional information, although it may be subject to greater subjectivity. As an example, a flood of intensity 2 could produce major damage, but with concentrated effects in agriculture (Intensity = 2, severity index = 2), while a flood of intensity 1, could have some weak damages, but extended to a large number of sectors (for example roads, tourism, commerce and agriculture) (Intensity = 1; severity index =  $4 * 1 = 4$ ). In other cases a flood could be very intense and also affect a large number of sectors, so its final impact is greater than if simply considering the intensity (For example, a flood of intensity 2, which affected roads, agriculture, tourism and trade would have a severity index of 8). Therefore, the severity index offers information that is complementary to the intensity level and the amount of damages.
- **REVIEWER COMMENT:** 2. In what concerns the structure of the paper, my only concern is the introduction. In page 4, paragraph 4 (lines 24-29) is too methodological to be included in the introduction. It confuses the reader who expects to read the objectives and research questions instead of fragmentary information about methods employed. I suggest this part to be transferred to the methods section.
- **AUTHORS RESPONSE:** Following your recommendation, we have transferred this part to the methodology section of the manuscript.

- **REVIEWER COMMENT:** 3. Please consider for your references regarding the databases in other countries also the high-impact weather events database of the National Observatory of Athens, Greece, which is also active on-line, constantly updated and with weather and impact intensity classification (10.5194/nhess-13-727-2013). The NOA db has been also based on press articles.
- **AUTHORS RESPONSE:** Thank you very much for your important suggestions. We have included the reference 10.5194 / nhess-13-727-2013 in the introduction section and we have pointed out the peculiarities of this database. Additionally, we have added its hemerographic characterization to the description of the NOA database.

#### **Technical corrections:**

- **AUTHORS RESPONSE:** Thank you very much for highlighting these important details and providing advice about the convenience of including some necessary clarifications. All these issues have been taken into account. Most of the corrections have been resolved thanks to a native English speaker who will be responsible for reviewing the text of the new version before being sent.

Here is a more detailed description of the changes carried out:

- **REVIEWER COMMENTS:**

1. P3, 115: Please delete the ‘y’.
  - **AUTHORS RESPONSE:** Delete
2. P4, 110: Please delete ‘but’.
  - **AUTHORS RESPONSE:** Delete
3. P4, 114: It is ‘flood cases’, not ‘floods cases’. Please repeat correction throughout the article.
  - **AUTHORS RESPONSE:** this mistake has been corrected
4. P4, 115: Please correct as: In this regard it must be clarified the difference between flood cases and flood events
  - **AUTHORS RESPONSE:** this mistake has been corrected
5. P4, 124: Please add ‘digital’ before ‘archives’.
  - **AUTHORS RESPONSE:** word included
6. P4,129: The sentence is too big. Please start a new one from ‘in general’.
  - **AUTHORS RESPONSE:** we have corrected this sentence in the revised manuscript.
7. P4, 133: Please delete ‘This is’, otherwise the sentence does not make sense. In the same sentence, please use the same term throughout the paper regarding the flood ‘case’. You have explained very well in the document the difference between case and event. So, the words ‘episodes’ and ‘events’ in this sentence do not fit.
  - **AUTHORS RESPONSE:** Thank you very much for your corrections. We have considered your suggestions and have replaced events for cases.
8. P5, 117: Please correct as ‘emphasized’. Also, please rephrase the entire sentence as it is not clear, especially the second part.
  - **AUTHORS RESPONSE:** we have corrected this sentence in the revised manuscript.

9. P6, 14: Please explain the: (2003: 800)
- **AUTHORS RESPONSE:** we have deleted “:800”.
10. P6, 15: please correct as: These situations.
- **AUTHORS RESPONSE:** this mistake has been corrected
11. P6, 110: please use the same term: environmental or climatic
- **AUTHORS RESPONSE:** we have replaced environmental by climate
12. P6, 113: just a thought: is this sentence for Franco necessary?
- **AUTHORS RESPONSE:** probably this sentence is not necessary. So, we have deleted this sentence.
13. P6, 118: please cut this sentence in 2 parts. it is too big and difficult to read
- **AUTHORS RESPONSE:** we have corrected this paragraph and shortened the sentences in the revised manuscript.
14. P6, 119: it is weird the use of ‘it has:’ after ‘the following criteria’. I think it can be improved.
- **AUTHORS RESPONSE:** we have corrected this sentence in the revised manuscript.
15. Table 1: what is MEDIFLOOD? do you mean SMC-Flood db? Also, the authors could enter an extra column to report the cities of head offices. The full newspaper names could be added here as a comment.
- **AUTHORS RESPONSE:** we have corrected the mistake and replaced MEDIFLOOD by SMC-Floods database. We have also added an extra column in the table to report the head offices cities. Additionally, the full newspaper names are added as a footnote to the table.
  -
16. P6, last paragraph: the different names are confusing. Consider keeping the short names of Table 1 everywhere in the text.
- **AUTHORS RESPONSE:** We have considered your suggestion and for the sake of clarity, we have kept the short names of Table 1 throughout the text.
17. P7, 15: 1) the sentence is too big. Please enter full-stop before ‘Taking into account’. 2) Please consider avoiding the footnote since it concerns only one source. You could include it in the text instead.
- **AUTHORS RESPONSE:** we have corrected this paragraph and shortened the sentences in the revised manuscript. Additionally, we have added the reference of note 1 in a sentence within the main text.
18. P7, 17:correct as ‘validated’
- **AUTHORS RESPONSE:** this mistake has been corrected
19. P7,18: please delete ‘de’. L10: please add space before ‘Secondly’. L22: please correct as ‘within’
- **AUTHORS RESPONSE:** all this mistakes has been corrected
20. P10, 14: Please begin a new sentence at ‘Multiplying:

- **AUTHORS RESPONSE:** we have corrected this paragraph and shortened the sentences in the revised manuscript.
21. Table 2: maybe it is better if you write ‘average severity index’
- **AUTHORS RESPONSE:** we have added this suggestion
22. P11, 17: Please add ‘the’ before ‘number’
- **AUTHORS RESPONSE:** “the” has been added
23. P11, 18: please consider defining ‘average intensity’, as this is the first time we read this.
- **AUTHORS RESPONSE:** following this suggestion, the definition of average intensity has been added to this paragraph
24. P15, 15: ‘concentration’ of what? I think something is missing
- **AUTHORS RESPONSE:** Thanks for detecting this mistake. In this sentence we want to show that during the fall there is a greater concentration of floods as intensity increases. Therefore we have modified the phrase to include the word floods: "during this season there is a higher concentration of floods as the intensity increases".
25. P19, 111: Please add ‘to’ before ‘add’
- **AUTHORS RESPONSE:** “to” has been added
26. P20, 13: please correct as ‘makes us’
- **AUTHORS RESPONSE:** this mistake has been corrected