Replies to specific comments- RC1

RC1.a: The whole database is based on proprietary formats and software, so limiting the accessibility and the usability of data and system. This should be acknowledged.

Authors: We have answered a similar remark (SC1) in the interactive discussion process. We plan on making the database accessible in more available formats on the open access platform to improve availability and usability.

Changes: QGIS and MAPINFO formats have been added online to a new version of the database available at : https://doi.org/10.5281/zenodo.1188551

RC1.b: I suggest to rewrite the abstract. It does not sufficiently the content of the paper. In the present form, it is more similar to an introduction. It should describe the purpose, the method, the structure, the results and the conclusions of the work. Moreover, also the application to the study area should be cited

Authors: the abstract has been rewritten in order to address your review. In the new abstract we tried to meet all of your expectations.

Changes: Abstract. The present paper introduces a new database for collection of flood-related damage and assessment at the local scale. Every year in France, recurring flood events result in several million Euros of damage, and reducing the heavy consequences of floods has become a high priority. However, actions to reduce the impact of floods are often hindered by the lack of damage data on past flood events. The DamaGIS database offers an innovative bottom-up approach to gather and identify damage data from multiple sources, including new media. The study area has been defined as the South of France considering the high frequency of floods over the past years. This paper presents the structure and contents of the database. It also presents operating instructions in order to keep collecting damage data within the database. This paper also describes an easily reproducible method to assess the severity of flood damage regardless of the location or date of occurrence of this damage. A first analysis of the damage contents is also provided in order to assess data quality and the relevance of the database. According to this analysis, despite its lack of comprehensiveness the DamaGIS database presents many advantages. Indeed, DamaGIS provides a great accuracy of data as well as a simplicity of use. It also has the additional benefit of being accessible in multiple formats and in open-access. The DamaGIS database is available at https://doi.org/10.5281/zenodo.1188551 .

RC1.c: Page 1, lines 18-19: Authors state that floods are the most damaging hazard in the world and then provide some details about people involved and economic damage. To support this statement, they should compare these values with other values related to different hazards, e.g. earthquakes, tsunamis, landslides, wildfires.

Authors: your suggestion has been taken into consideration and changes have been made within the manuscript accordingly.

Changes:

1 Introduction

Floods are the most damaging natural hazard in the world. Between 1995 and 2015, they affected more than 2.3 billion people and caused about $662 billion in damage around the world. By comparison, in the same period of time both landslides and

20   wildfires have affected 8 million people and caused less than $100 billion in damage whereas earthquakes have affected 121 million people and all geophysical hazards combined caused $787 billion in damage (Wallemacq, Guha-Sapir, McClean, Cred, & Unisdr, 2015). Although the current situation is already alarming, different studies have estimated that the socio-economic

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RC1.d: Page 1, line 22: please note that the IPCC (2014) synthesis report provides evaluations on flood risk to the population, and states that the number of people exposed to flood events will increase worldwide. This should be mentioned.

Authors: regarding this synthesis report, we included your suggestion by highlighting the role of climate change in the current and expected future increase of human exposure to floods.

Changes:

20   Although the current situation is already alarming, different studies have estimated that the socio-economic impact of river floods will more than triple by the end of the century, due to climate change (Alfieri, Feyen, Dottori, & Bianchi, 2015; Munich RE, 2017; Pigeon, 2002). Moreover, climate change has already been proven to significantly increase human exposure to floods at the present time as well as expected in the future (Pachauri et al., 2014).

RC1.e: Page 1, line 22: I suggest mentioning the last report of Munich RE: https://www.munichre.com/site/mram-mobile/get/documents_E-253943638/mram/assetpool.mr_america/PDFs/3_Publications/TOPICS_GEO/TOPICS_GEO _2017.pdf

Authors: The report you suggested has been included within the sources of this topic.

Changes:

20   Although the current situation is already alarming, different studies have estimated that the socio-economic impact of river floods will more than triple by the end of the century, due to climate change (Alfieri, Feyen, Dottori, & Bianchi, 2015; <mark>Munich RE, 2017;</mark> Pigeon, 2002). Moreover, climate change has already been proven to significantly increase human exposure to floods at the present time as well as expected in the future (Pachauri et al., 2014).

RC1.f: Page 2, line 32: some other databases and inventories of floods in Italy should be mentioned. In fact, In Italy, an inventory of historical floods (and landslides) was prepared within the framework of the AVI (the acronym is for Italian Vulnerable Areas) project; see http://avi.gndci.cnr.it/it/archivi/archiviostorico_it.htm http://sici.irpi.cnr.it/storici.htm. Moreover, the website of the POLARIS project (http://polaris.irpi.cnr.it/), managed by CNR-IRPI (Research Institute for the Geo-Hydrological Protection of the Italian National Research Council), provides updated annual reports on floods and landslide risk to the population in Italy. Finally, I would suggest having a look at the recent paper by Napolitano et al. (2018), in which a new database structure for landslides and floods and their consequences, as well as numerous other natural hazard databases (see references therein), are presented.

Authors: We have acknowledged the different projects you cited. Indeed, we didn't know about them and they are very interesting. We have then integrated information about two of these projects within the manuscript. We have chosen to leave out the POLARIS project as the link with our topic seemed less direct than for the other two.

Changes:

   In Europe, several countries have implemented their own databases on flood damage at the national scale. Germany has the
5   HOWAS21 database (Kreibich, Thieken, Haubrock, & Schröter, 2017), Switzerland the Swiss Flood and Landslide Damage Database (Kron et al., 2012) and Italy the FloodCat database (Daniela Molinari, Legnani, di Lecco, & Di Architettura, 2013). <mark>Italy also has developed several projects to enhance the collection of flood damage at the national scale. Among these projects, the AVI (Italian Vulnerable Area) project may be mentioned. The AVI project aimed to create a bibliographical and archive inventory of landslides and floods in Italy based on newspaper screening from 1918 to 1990 (Guzzetti, Cardinali, &</mark>
10   <mark>Reichenbach, 1994). More recently, the LAND-deFeND (LANDslides and Floods National Database) project has developed a new database structure to store and organize information on landslide and flood events (Napolitano et al., 2018). Both of these projects are very similar initiatives to the work presented in this paper.</mark>

RC1.g: Page 6, line 11: Authors state that each flood event corresponds to a polygon feature. Please specify how the polygon is drawn.

Authors: The polygon features correspond to French administrative entities known as departments where flood events have caused damage

Changes: This precision has been included within the manuscript.

RC1.h: Page 7, lines 15-16: just a curiosity: why Authors used Lambert93 as reference system instead of a more common WGS84?

Authors: It is an arbitrary choice. Indeed, since 2006 the French legislation recommends using Lambert 93 as reference system for national geographic data (Decree n°2006-272 of 3 March 2006).

Changes: None

RC1.i: Page 8, Table 1: "Seasonal accommodation" is the name of the type and of one subtype. For the sake of clarity, I would suggest differentiate them.
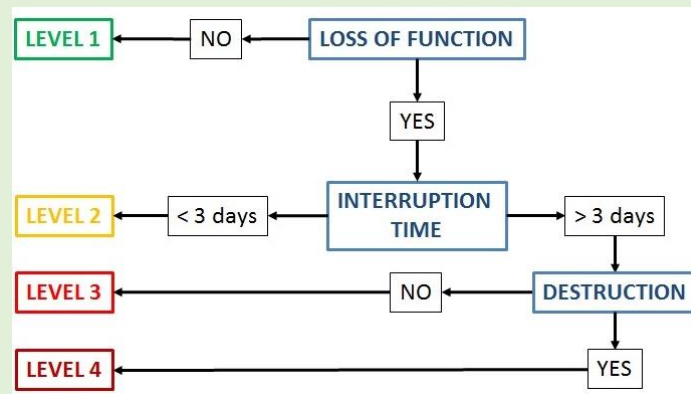
Authors: Your suggestion has been taken into consideration and changes have been made within the manuscript.

Changes: Name of "seasonal accommodation" subtype has been changed into "Lodging"

RC1.j: Page 10, Figure 4: I'm not sure that the first block of the flow diagram (e.g., Flooding; Yes; No) is useful. If a record is included in the database, a flood must have occurred.

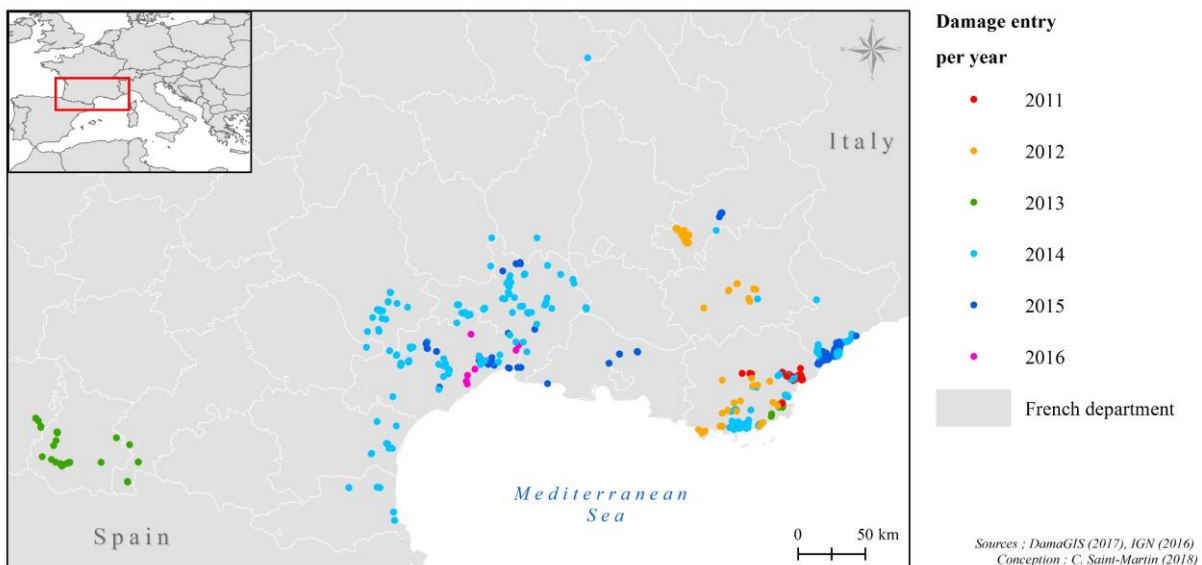**Authors**: The first block of the flow diagram has been deleted.

Changes:

RC1.k: Page 11, Figure 5: I would suggest adding an inset with the indication of the study area inside the whole France or Europe.

Authors: Your suggestion has been taken into consideration and changes have been made within the manuscript accordingly.

Changes:

RC1.l: Page 12, line 13: given the explanations provided in the previous two periods (from the beginning of the page), the main reason of the over-representation of economic activity and road network is related to the information completeness. These two types of element are considered by more information sources and media than the others. This issue of information completeness should be better acknowledged by the Authors.
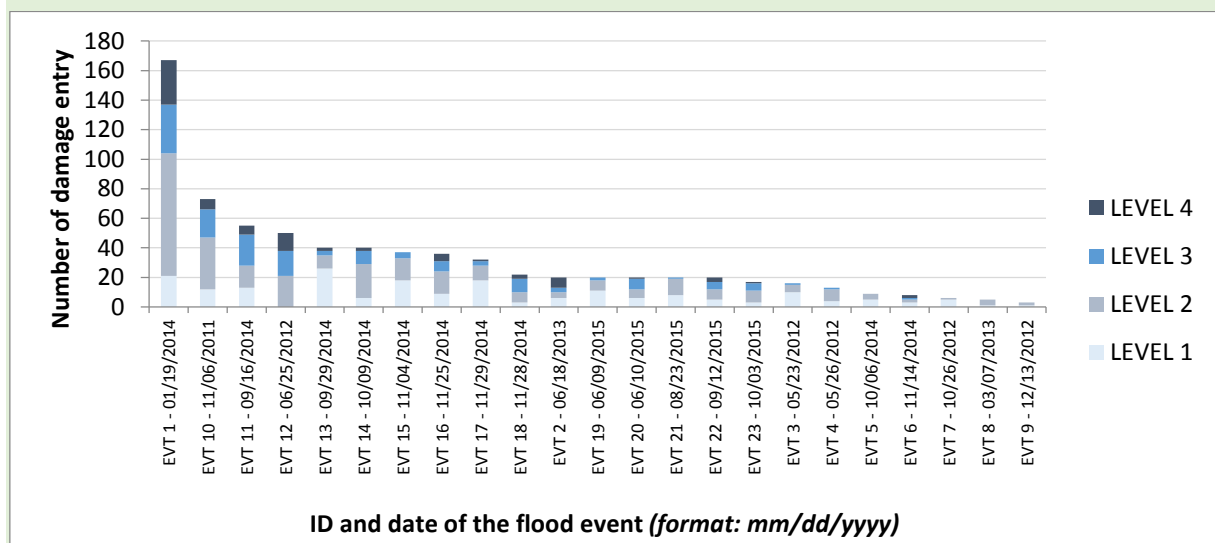
Authors: We chose to only address the completeness issue in the last section of the paper to avoid redundancy. You are perfectly right by addressing this remark as it is indeed a completeness issue. However, the authors tried to highlight this fact within the text, Page 13 lines 1-3 and 10-12. If after reading these parts you still consider this information lacking don't hesitate to raise this concern again and we will gladly add some explanations into the manuscript.

Changes: None

RC1.m: Page 12, Figure 7: the dates of occurrence of the flood events could be added to the IDs in the labels of x-axis.

Authors: Your suggestion has been taken into consideration and changes have been made within the manuscript accordingly.

Changes:

RC1.n: Page 15, "Limitations of the database" section: I would suggest acknowledging the possible lack of information in the compilation of the database.

Authors: It seemed to the authors that this concern had already been addressed. Indeed, we tried to highlight this fact from Page 15 line 27 to line 29. However, if after reading this part you still consider this information lacking don't hesitate to raise this concern again and we will gladly add some explanations to the manuscript.

Changes: None

RC1.o: Page 16, line 9: I suggest including also an index to assess the temporal accuracy of the data.

Authors: Your suggestion has been taken into consideration and changes have been made within the manuscript accordingly.

Changes:

10   of the data. For instance, a damage data available at the building scale would have a high index, while damage data at the neighbourhood scale would have a low one. In the same vein, an index to assess the temporal accuracy of the data might be considered.