Referee 1

Thank you for this substantial contribution.
Authors' response: Thank you very much for your interest in our work and for your constructive review. Below are our responses to all the comments and questions raised.

I have some general remarks and questions:
Questions:

1.) Did you take into account the accumulation of wealth and infrastructure over time and its influence on the statistical results? If yes, did you apply an approach that tried to correct this artefact? Please describe your correction approach. If you did not correct it, please reason why you choose not to correct it.
Authors' response: No, no "correction" has been made, mainly because it was not the aim of the ORRION database that our paper aims at introducing and describing. Indeed, ORRION's goal is to share raw flood information only, at least in its current state, avoiding subjective choices as much as possible. The objective of ORRION is to provide in a transparent manner all the information required to conduct a geo-historical analysis of the event chronologies. Such an analysis allows to highlight the factors that explain the spatio-temporal distribution of flood events, namely anthropogenic factors related to sources, vulnerability and infrastructures, but also natural factors related, e.g., to climate. This is what is discussed in section 5.1 of the paper, that highlights the major pattern of change that are visible at the scale of the entire database, and/or more specifically for certain rivers and locations. For instance we clearly say that the shape of the records (number, damage types) reflects, among other effects, the increase in wealth and stakes and of infrastructure construction with time. However, our discussion is only a first step aiming at putting the events in their social and biophysical contexts. Much more work is required in one wants to go further in order to precisely distinguish the weight of the different factors that explain the distribution of the retrieved flood events. Same applies if one more specifically wants to get rid of one specific effect such as vulnerability and infrastructure changes as your comment suggests.
Hence, the second reason for not doing such a "correction" of the record is the complexity of doing this in a realistic way. Indeed, the increase of wealth and infrastructures can have various consequences on flood risk, either direct or indirect, immediate or delayed, positive or negative, local or at larger scale, etc. Also, these consequences can be on the hazard, the stakes and the vulnerability, the perception and the memory of risk, the production of sources etc. In short, all the chain that leads to the data currently in ORRION can be affected and a very large amount of additional information regarding the evolution of land use, sources, natural factors, etc., is required in order to really understand the changes of the system at risk through time and draw firm conclusions. Conducting such an analysis is extremely time consuming and could not, so far be achieved at the scale of our entire database. This was done, however, at the finer scale of a municipality or a small catchment, so as to highlight specific effects. For example, Martin et al (2017) demonstrated the impact of the construction of the Ill canal at Mulhouse and in Strasbourg on the flood record. At a more regional scale, it could be shown that the spatial distribution of the consequences of the 1910 flood in the Rhine plain can only be understood if one considers the uneven development of river correction works at that time. These examples and similar studies we aim at undertaking on other rivers and locations should help, in the future, extrapolating at the scale of the entire database.
These points, already present in the current version of the paper will be highlighted even more strongly in the reworked version of the paper, especially in the method (introduction of ORRION) and discussion (interpretation of events chronologies) sections.

2.) Similiar question as above. Did you take statistically into account the different availability of documentary evidence on floods over time and location? If yes, how did you correct this, if no, reason why you choose not to correct it?

Authors' response: Again, no correction, and same justification. Our willingness is to disseminate all the raw information collected, avoiding subjective choices as much as possible. Also, the time required to do such a correction for each river/location is too large for the work to be conducted at the scale of the entire database.

However, we want to stress that ORRION data is based on an extensive archival campaign (Transrisk project) further complemented by participative data. This was made in order to maximize the amount of information summed up regarding past events. In addition, all sources related to events are documented in the database, and the evolution of sources with time at regional scale has been already studied by Himmelsbach et al (2014) and, regarding specific bias, by Martin et al. (2015). This all should enable the source bias to be corrected in the future by anyone interested in using the information for, e.g., improving risk mitigation or studying the influence of climate on flood occurrences.

This point, already present in the current version of the paper will be highlighted even more strongly in the reworked version of the paper.

3.) Does the quality of some of the documentary flood evidence allow to assess the discharge of the pre measurment period flood events? If yes, why did you not assess the discharges? This could help to improve e.g. the design floods of e.g. a 100 year or a 300 year event. You furthermore could quantify the effects of local to transregional river engineering measures and/or the effects of landuse and climate change on the flood magnitudes over time.

Authors' response: Thanks for this question/comment important in terms of flood mitigation. Indeed, the information gathered makes it possible to reconstruct peak discharges (more or less precisely). Reconstruction methods are now available in the flood literature and are becoming more and more popular. Annette Boessmeier developed and used some of these in her PhD to reconstruct peak discharges for the Kinzig river belonging to the German part of the TRansrisk project. Also, ORRION's information already allowed to better characterize the mapping of the historical floods of 1852 and 1860 for the Ill in Mulhouse, and to validate the corresponding discharge modelling that has been realized within the framework of the European flood directive. Finally, the study of old water levels already revealed that the computation of the centennial flood of the Zorn river was affected by several errors (Martin et al, 2018). Hence, we are well aware of the potential of discharge reconstructions and of the usefulness of our data to achieve this goal. Simply, again, doing this for all our rivers is beyond the scope of the work presented here. Annette Boessmeier did it for one river only, and this took her most of her PhD… Here, the objective is more modest: to introduce what we already have (a lot of information and chronologies of events, typologies..) which leads to an article that is already long (cf. referee 2 review.). However, of course it would be very useful to do the discharge reconstruction all over the study area and period, and this is clearly an objective for future developments.

The reworked version of the paper will precise this and insist on the promising perspectives offered by discharge reconstructions on the basis of the available information.

Remarks: I would suggest to not only include pictorial evidence of floods but also (historical) river profiles and to georeference them at the correct location with GIS.

Authors' response: We indeed summed up some historical river profiles, but not that many and most of these concern the Rhine and the Ill rivers only. This information was found in the archives but the search was not very successful. Apparently, old profiles have been often lost or destroyed (a pity). However, when found, such documents were indeed very useful to retrieve the past profiles of the Ill and Rhine rivers and, e.g., better understand the floods of 1910 and 1919. Hence, in the future, the profiles we already have will be included in ORRION. Also, we plan to conduct some new archival searches at the Services of Navigation which has been so far inaccessible to us because of successive removals. This may be the right place to gather more information about past river profiles.

This will be précised in the revised version of the paper.