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Hydrology and Earth System Sciences
Discussions

Interactive comment on "The "Prediflood" database of historical floods in Catalonia (NE Iberian Peninsula) AD 1035–2013, and its potential applications in flood analysis" *by* M. Barriendos et al.

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Anonymous Referee #1 Received and published: 18 September 2014

General comments - Historical data bases are a very important fied to environmental studies. This is a great proposition and project for the scientific community. - But this document is more a technical paper showing first stapes of a tool than a scientific text with specific questions.

We would like to thank this general description of our work partially already exposed in the reviewed manuscript. The referee is right and it is possible that scientific aspects are not evident. We would like to could explain different aspects related to scientific questions dealt in the manuscript:

1) Our manuscript is focused on methodological aspects, not showing specific results. We suggest criteria and procedures for reliable data collection, homogeneous treatment and analysis of historical data. We want contribute to interdisciplinar teams working on flood reconstruction transmitting our research experiences on hydraulic, hydrological and meteorological analysis of these events, with the aim to increase knowledge about dynamics of them.

2) Effort of interdisciplinarity. One team of geologists, physics and historians is working together to develope new procedures of data collection and analysis of historical floods.

3) Definition of a state-of-art (concerning data collection and methods) for historical floods in Spain, previous to specific work showed in our manuscript.

4) Data collection of flood cases. With new methodological approach defined in our manuscript, a large work of reorganization of previous materials and information from different projects and databases was made, but also new research in different historical archives and bibliographical sources is shown. This effort is strongly summarized in our manuscript showing a density of flood chronologies 5 times denser than databases of Spanish Civil Protection (p. 7949-7950 and Table 1, p. 7967).

5) We develop integrated methodologies (or more correctly, coupled methodologies) was a work accompanied by study cases, taking worst flood events to prove in real time methological progresses.

6) We show one list of events (Table Appendix 1, Table Appendix 2, p. 7968 and 7969), involving around 500 flood events. Most of these results were not showed with the aim to be synthetic, focusing on methodological aspects.

Specific comments

7941 - Link between 2d and 3th sections. Can we enlight the Prediflood context origin. Why the context is specialy different from previous situations ? Does it show a new attitude from environmental public actors ?

We agree with the referee. We have modified the text following her/his suggestion, introducing one paragraph on the beginning of 3th Section.

7942/5-19 – Examples should be useful for each statement to explain the distinction with historian work, and specialy the link between hydrology/hydraulic and "environmental history" new problematics.

We agree with the referee, introducing examples it's a good idea. We have modified the text following her/his suggestion.

7942/20-25 => 7943 / 1-8 – The presentation of data base structure (data plan, data tables) should be greatful to show computer answers to historian questions data processing.

We are not sure if we have clearly understood the referee's comment, but we want explain any aspects about our data organization:

Our database don't correspond to informatic conceot of one large informatic file (i.e. Acces files or other database software). By this reason we cannot show how is organized, how runs, to be useful for other people involved in these tasks. Our database is more close to idea of an Historical Archive: we preserve materials in most original format as is possible, digitising information in text files avoiding changes of format, summaries, or reduciton of details. We consider for future analysis and reconstructions that original aspects must be preserved in the case aplication of new software or technics could allow new improved results. By this reason we don't show structure of database files. We don't have them. We have original materials transcribed in Word files. After it, we generate a large numeric file where we introduce basic characteristics

for every flood event. For next future, when we have complete data collections, we are considering implementation of Geographical Information System software, by flexibility on data storage and data analysis in different spatio-temporal scales.

7943/18-21 – We don't understand clarely the 3 groups distinction in relation with their nature, medium or contents. How data base documents are referenced ?

We have modified the text in order to clearly differentiate the 3 groups. concenring your especific quesiton about how we reference flood events, explanation of coding is in section 3.2. We advance you that our main system for a common reference system is complete date of event YYYY-MM.

7944/6-11 - Example should be useful.

We agree with this suggestion. We have modified the text accordingly by looking.

7944/19-26 => 7945/1-5 – The uncertainty (from space, from time) should be more taking in account. How the data base manage this (important) point ?

Concerning dates of the events, we are confident. Documentary references are related to a complete and detailed description of dates. Only calendar adjustements are required (i.e. Julian to Gregorian calendar style). Fortunately, we focus on administrative documentary sources and local newspapers. Dating of this type of documents is exact.

Concerning space, your comment is right. At present we arrive to municipality reference on our Excel File Catalogue. Of course, flood affecting structural elements or districts require detailed descriptions. To face it, we are recording space references of affected elements or areas into Textual Archive with original names and descriptions, as detailed as possible. For future research, we would like to put in digital format all this information. Best tool for that will be a second generation of our database, designed into a Geographical Information System software. We have clarified this point in the new version of the manuscript.

7945/12-13 – A flood event definition should be proposed in relation with spatial and

time criteria crossing with phenomenological event types.

We totally agree with your comment. We accept for a better understanding of flood events, from meteorological and hydrological points of view, is very important an approach considering spatial coverage and time evolution. We consider this criterion but we want apply them in a future new step of our database. When our first "quantitative" effort of data collection from old and new data sources will be finished, we would like work on this "qualitative" effort, improving/diversifying tools of definition and classification.

We have included in the new version a comment about this point.

7946 – Concerning the 5 event classes, methodological choices should be take in account the stakes exposed and their evolution during the period. Thus, the same hydrometeorological event, at the same place, should be, for example, class in C2 in 1750 and C4 in 1900 because of increase of buildings, houses, roads, dikes, etc. How can we compared class of events without measure this aspect too ? Authors underline themself this methodological question without clarely methodological answer

This is a critical point, present in all similar research from other European research groups, specially on areas with strong demographic/urbanistic growing. How is it possible to suggest a constant (homogeneous) system of classification when rivers and human occupation of floodable areas is not constant? We have included in the text a discussion about this point.

(7948/25 => 7949/2). It's a main point.

We have included in the new version some sentences about this point. We suggest a general periodization, to be detailed according historical evolution basin-by-basin.

7947/1-5 – Same remarks about stakes. Their development contibute for a large part of risk increase.

We have included in the new version a discussion about this point.

7947/14-15 – This affirmation should be strengthen in relation with space and time flood event definition (main point).

Yes. We agree to strength into the text these basic characteristics of historical information on floods.

7949/3 . . . - Same remarks about stakes and their evolution. Socio-economical contexts and evolutions explain a large part of space and time documentary sources numbers and types.

We agree with your comment and the text has been modified accordingly.

7951/15-25 => 7952/1-9 – The rank should be more fondated. Mains three criterias overlap.

We partially agree with the referee. Concerning overlapping of definitions, we accept exist relative overlapping between classified sources. When analyzing one source, we can find complex situations not easy to be described or classifies strictly. For example, one historiographical work of Class 2 can contain one singular original text transcribed from original documents already missing or destroyed. For this flood case, one source level 2 can be considered partially as source Class 1.

Classification of information sources has a main objective: to make a quick definition of what is level of quality of information for every flood case and flood event under study. Into this classification, we must consider a very large typologies of materials. For a common classification, we cross two criteria, reliability and contemporaneity regarding described details of flood case. It's a general approach, but it's best we can find considering all sources existing for past 1000 years in Iberian Peninsula context.

7952/14-18 – Does the process applies for all the space scales ?

Yes, of course. At present we have enough information for example to study most severe events. However, we are aware that a deep historiographical research of the event could allow us to reach information sources of level 1. Therefore, we will obtain

more details about the duration of the event and the specific areas, river sections, structural elements affected by the flood.

Thanks for your useful and fruitful comments.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 7935, 2014.