



## **Mapping historical information for better understanding the causality factors of past disasters**

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The Flood Directive of 2007 promotes the use of historical information in order to mitigate the impact of future extreme events. According to this text, the study of past events offers new insights for better understanding the causality factors of a disaster, from hydrometeorological keys to socio-political repercussions of the flood. In this presentation we decided to focus on the study of factors leading to the exceptionality of a hydrological flood event. This aspect is regularly pointed out by the feedbacks carried out after a catastrophic event and remains a subject of debate for risk managers. The role of antecedent meteorological conditions is especially underestimated by local authorities. These factors can however be considered as a key issue to appreciate the exceptional character of a hydrological disaster. For example the 2013 June floods in France that affected the region of Pyrenees revealed the significant contribution of snow melting to the discharges recorded. In an article of 2014, Schröter et al. showed that the soil moisture can be considered as a key driver of the generalised flood hazard intensity that affected Germany over the same month of June 2013.

With regard to these assessments, some considerations emerge. Does a diachronic appraisal of past disasters point out the main issues responsible for an exceptional flood hazard level? Is there common causality issues involved into these extreme hydrological events?

In order to answer these questions this presentation proposes a comparative analysis of nine major floods that impacted the French territory during the XXth century (from 1910 to 2010). The set is composed by different flood typologies (from torrential events to floods resulting from groundwater level rising) so as to get a complete view of flood risk in France. The methodology proposed relies on a cartographic approach to highlight the causality factors of these past hydrological disasters. For instance, mapping the rainfall data over the representation of the maximum discharges recorded can help to understand the significance of the rainfall event. In some cases, the use of textual historical information allows to emphasize the significance of other factors such as snow melting or the influence of anthropogenic infrastructures. Indeed, mapping historical information seems to be an original approach to represent the various spatial and temporal scales of historical disasters and an interesting tool to explore the exceptionality of the hazard level.