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Fatalities caused by floods: a comparison between global databases and country scale historical research

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Datasets supporting the study of natural disasters and allowing spatial/temporal analyses of phenomena and their interactions with human societies is rapidly growing, due to the efforts of insurance companies, universities and humanitarian organizations. At the global scale, several disasters catalogues are available, even if some are only partially accessible. Generally, the focus is on the complete impact of disasters, in terms of areas affected and economic damage. Each record is a natural disaster, while database fields contain parameters assessing disaster magnitude. One of this parameter is the number of fatalities.

In Australia and USA, databases of fatalities caused by specific kinds of natural disasters are available, while, for Europe, natural disasters mortality is often investigated using global databases.

The present research focus on floods and their effects on people mortality. We named “flood fatalities” (FFs) people killed by direct impact of flood events due to the following short-term clinical causes: 1) Drowning; 2) Collapse/Heart attack; 3) Poly-trauma; 4) Poly-trauma and Suffocation; 5) Hypothermia; 6) Suffocation; 7) Electrocutation.

For a 40-years study period and for 9 European study areas, we performed a survey of FFs reported in four of the widely known global databases. Then we compared figures with the results of a very specific research carried out for the same study areas and study period at a country scale, and focusing on a very restricted field: fatalities caused by floods.

The comparison highlights as the use of global databases can supply figures of FFs not correctly estimated, either underestimated or overestimated.

Underestimation depends on the fact that collecting data at the global scale needs some severity threshold of floods to be included in the database. Thus, local events causing a few FFs, as i.e. flash flooding, are systematically excluded, even if the majority of floods that occur in developed countries kill less than 10 people. This results in an underestimation of FFs, which is going to increase due to the increasing frequency of localized floods or flash floods related to climate change. Overestimation, instead, can happen due to the classification of fatalities occurred at the same time of the flood, even if they are caused by other phenomena (i.e., landslides, debris flows

and wind).

This work aims to demonstrate how a database of flood fatalities realized at a country scale can supply realistic figures of fatalities in European countries, providing information that can reduce flood fatalities in the future. Our database is available for the period 1980-2018 (Petrucci et al., 2019). We encourage researchers working in European countries to collaborate with us to increase spatial coverage of the database and promote its common use in studies on flood mortality.

Petrucci O., Aceto, L., Bianchi, C., Bigot, V., Brázdil, R., Pereira, S., Kahraman, A., Kılıç, O., Kotroni, V., Llasat, M.C., Llasat-Botija, M., Papagiannaki, K., Pasqua, A.A., Řehoř J., Rossello Geli, J. Salvati, P., Vinet, F., Zêzere, J.L. (2019). Flood Fatalities in Europe, 1980–2018: Variability, Features, and Lessons to Learn. *Water*, 11(8), 1682.