



Comparison of flood mortality indices between western Algeria and southern Italy to enhance flood risk assessment within the Mediterranean framework

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Reducing flood-related deaths necessitates a deeper comprehension of the risk elements involved and the implementation of effective mitigation strategies. To understand the differences in flood-related deaths between developed and developing countries within a Mediterranean framework, we compiled a comprehensive database documenting 242 cases of mortality in western Algeria and Calabria, southern Italy. This database spans over a 33-year timeframe from 1990 to 2022, encompassing details such as the time and place of fatal accidents, victim characteristics, circumstances of death, and victim behaviour. In order to highlight the people's vulnerability, we have innovatively developed 13 mortality indices consolidated into four comprehensive indices: i) human, ii) physical, iii) environmental, and iv) circumstantial. The findings indicated a reduction in severe mortality incidents and the yearly number of flood-related deaths in both areas. The frequency of fatalities and the average number of deaths per year are higher in western Algeria, although the average number of fatalities per flood is practically the same. The flood mortality seasonality is similar oppositely to the spatial distribution. The assessment of mortality indices revealed similarities in vulnerability, except for the flood risk identification, rainfall and event death indices, which highlight the vulnerability of western Algeria, requiring prevention and protection actions suggested in this study. A key area for future research is to focus on the complex interaction between precipitation and basin-scale conditions, which would further strengthen the investigation into the role of victim behaviour in flood-related incidents. Moreover, refining the proposed indices with precision and validating their assessment procedures could offer novel, practical recommendations for saving lives in future flood events.