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An integrated approach for investigating flood risk perception in urban areas: some hints from the city of Brindisi (southern Italy)

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Increased availability of social media and crowdsourced data is becoming a precious source of information in Disaster Risk Management, heralding a new era where the policy makers adapt their strategies to the potential of these new technologies. This is also happening in the field of Flood Risk Management, where the aid of new technologies can provide important support for disaster risk reduction. On the one hand, they play an important role in the collection, monitoring and data analysis of physical flood processes. On the other hand, they foster the involvement of citizens threatened by the flood risk situation, creating shared knowledge and collaboration and becoming tools to educate and empower citizens' behavior, increasing community resilience.

Evidence shows that community response to flood risk is associated with the social context in which a specific flood occurs. A wide range of sociodemographic characteristics, but also the psychological factor of risk perception, have been identified as factors influencing citizens' response, contributing in increasing or decreasing the effects of flooding on the environment.

In this study a coupled approach that combine Crowdsourced retrieved data and information from newspaper media is proposed and applied to the urban territory of the city of Brindisi (southern Italy), subject to multiple sources of flood risk, in order to demonstrate potential advantages arising from the implementation of such built analysis.

Crowdsourcing data based on e-survey allowed the collection of social flood data in order to explore how citizens living in the urban area of Brindisi perceive flood risk and assess their preparedness for protective measures. Specifically, the degree of citizen risk perception has been investigated through factors influencing risk perception subdivided into three categories: world view, media influence and social value and trust; the degree of citizens' preparedness knowledge has been investigated asking citizens to select the recognized Flood Protection Strategies from the set of alternatives in the Civil Protection Behavioral Guide.

Integration of available data about previous floods with a newspaper-based research of historical floods allowed to detect a tendency of Brindisi urban territory to be subject to floods that can be reconducted mainly to pluvial and fluvial type. Journal reports provided precious details not only on affected streets and neighborhoods, but also on type and dynamics of damages. Results of

surveys showed how this flood phenomenology is perceived by population, providing an important integration of the information available from current flood maps. Measurement of emergency measures knowledge revealed to be an effective source of information for an a priori modelling of reliable flooding scenarios. Results emerging from proposed approach can constitute a precious support for emergency managers and local Authorities, because of its ability in capture heterogeneities in flood phenomenology and population preparedness. Emergency planning phase can be therefore enriched with elements that contribute to the definition of risk potential situations and therefore make the response and recovery phase more effective.