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## **Towards impact-based communication during emergencies: Development of site-specific warning services in Catalonia**

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Early warning systems are a critical element for flood risk reduction. If properly designed and disseminated, flood warnings can empower citizens and communities at risk by enhancing their preparedness and their response capacity during a flood event to reduce the possibility of personal injury or loss of life. Nevertheless, the reported situations where citizens did not react to warnings keep increasing, regardless if timely warnings were issued in the area. Receiving an official flood warning is not enough to guarantee appropriate proactive responses and self-protective behaviours from citizens during weather-related emergencies.

Flood warnings should aim to communicate clear and relevant local information on how floods might have an impact on citizens and what actions they can do to ensure their safety. Site-Specific Warnings (SSWs) are proposed as a step towards impact-based communication for citizens during weather-related emergencies. The SSWs aim to translate meteorological and hydrological hazards into location-specific impacts and thus, propose appropriate local self-protection actions using local vulnerability and exposure information.

In this work, a prototype of SSWs has been developed for previously defined vulnerable points in the city of Blanes, Spain. As part of the first stage of implementation, a mobile app has been designed to serve as a risk communication platform during emergencies. The SSW app can inform users in real-time, the current warning level of vulnerable sites in the city on Blanes and the appropriate protective actions to be performed by citizens on each location to minimize consequences. Further components are the capability of users receiving official messages from authorities regarding a site risk level and the possibility of linking the SSW app to tailor-made multi-hazard early warning system platforms for operational authorities.

Finally, by moving towards warnings that can help citizens respond appropriately and effectively during a crisis, SSWs could play a central role in promoting a shift on how societies and authorities currently deal with weather-induced emergencies and their associated impacts.