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A Citizen Observatory to reduce the vulnerability of flood risk in the catchment of the Gander, Luxembourg

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On the 30th of May 2016, following exceptionally heavy and intense rainfall in West and Central Europe, the stream Gander, in the region of Moselle, Luxembourg experienced an extreme flood with an estimated return period of 100 years inundating large parts of the commune of Mondorf-les-Bains. Although it has already experienced floods none comparable with that magnitude has been recorded in the past with the exception of one described in 1708. In the interest of reducing vulnerability to future flood risk, an innovative attempt was made to reconstruct the flood event together with citizens and the fire brigade and to develop a Citizen Observatory for early warning of floods. Since no gauging station exists on the River Gander the flood hydrograph passing through Mondorf-les-Bains was estimated by analyzing photos, films, eye-witness accounts and by creating an interactive GIS map of flooded areas recorded by the fire brigade. The discharge at different times of the flood was estimated from fixed cross-sections and moving objects in the films. Peak discharge near the center of town was estimated at 80 m3/s as well as the timing of the SMS flood-warning relative to the rising flood limb. Other important information on the timing of bridge obstruction and subsequent flooding could be established. A study on the perception of flood risk one year after the flood showed that 80% of the population would be potentially willing to participate as citizen scientists in early flood warning via simple water level readings and other flood observations. Following the first international conference on Citizen Observatories for Water Management in Venice in 2016 and the working example of Vicenza, stream stages are being operationalized at different locations throughout the Gander catchment upstream and within Mondorf-les-Bains and Altwies. Citizens have been identified for monitoring. The aim is not only to create early warning but also to track the speed of passage of a flood peak through town. The reconstruction of the extreme flood of 2016 and the creation of the Citizen Observatory is already increasing flood risk awareness and has gained strong support amongst politicians, the commune's risk preventionist and citizens alike.