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Heavy rain and flash floods in rural areas - A cooperative approach for flood response in the region of Glashuette, Germany

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Climate change and its consequences lead to an increase in small-scale heavy rainfall in the eastern Ore mountain region of Germany. Hence, an adaptation of existing structures of civil protection to the increasing number of extreme weather events is required. This should also include an improved cooperation between professional and volunteer emergency units, an involvement of unaffiliated volunteers as well as a dialogue with those people potentially affected to enhance disaster preparedness. Along these fields of action, a pilot concept is presented for coping with locally occurring heavy rainfall and flash floods in small catchments using the example of Glashuette region. Challenges arise due to the mountainous region with several villages located in small, ungauged, fast responding catchments and required set-up times of the emergency units. The concept includes the following key aspects:
(1) A hazard analysis for the identification of hot spots. Based on a crowdsourcing approach a series of discussion rounds with the population in the villages is performed for data/information collection of past flood events. These soft data is used to reconstruct historic flood events and to calibrate hydrologic and hydraulic models, which enable scenario analysis. The results allow for an improved deployment planning and targeted stockpiling of mobile flood protection measures.
(2) Formation a pool of unaffiliated volunteers. These are individuals and companies registered with their skills and resources in a so-called volunteers pool of the municipality. If necessary, the response unit can access this pool and activate unaffiliated volunteers. An information campaign was launched by a series of workshops, which also addressed measures of flood self-protection.
(3) Formation a local information network. These include a network of local (lowcost) rainfall measurement stations operated by the public, as well as a web-based data collection tool of flood events and damages for documentation and reanalysis.
The contribution presents results from the three key aspects and experiences of the cooperation with the local actors and the population. In addition, an outlook on further steps is given such as for organizing and training of the cooperation between emergency units and unaffiliated volunteers.