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URBAS - Prediction and management of flash floods in urban areas

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Recent studies about climate change indicate growing frequency and intensity of flash flood events in Western Europe. Flash floods are caused by extreme local precipitation and are sometimes accompanied by thunderstorms. The precipitation amounts of such events partly correspond to return periods greater than 100 years and may trigger flooding in urban areas. The flooding can be due to extreme runoff in small catchments and/or overload of the sewer system. These local events often account for a high proportion of the annual flood losses in Germany.

Most of the knowledge about flood protection and coping strategies refer to river flooding in large catchments and cannot be applied to local flash floods. Whereas much effort has been made to develop flood risk maps along rivers, little is known about the regional distribution, the frequency, and the typical damages of local flash floods in urban areas. Besides there are no adequate forecast or warning systems. Guidelines about effective loss mitigation measures and disaster control in case of an emergency are also missing.

Within the URBAS project the meteorological parameters (e.g. precipitation, intensity, frequency and distribution), the runoff, and the damages of flash flood events are investigated. Innovative feasible actions and mitigation measures for the local authorities are developed. These measures should be of a reasonable cost-value ratio and have to consider limits and potentials of all participants.

For 15 selected municipalities in Germany typical case studies (flash flood events) will be closely analysed. Therefore modern technologies such as the German Radar

Network for hydro-meteorological investigation of precipitation and runoff will be exploited. In addition assessment of damage at micro scale as well as ex-post-analysis of typical courses of action of relevant actors will be carried out. Based on these studies, forecast tools will be improved and recommendations will be given concerning information management, early warning, loss mitigation measures and disaster control at local scale.

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