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50th International Symposium on Hydraulic Engineering Aachen (IWASA)

„Heavy rainfall and flash floods in urban areas“

9th and 10th January 2020

In the past two decades, formerly simple flood protection has developed into complex flood risk management. Expert's and public's focus of this evolution is specifically relevant to the flood events in rivers. This development was triggered in Germany by the flood incidents at Rhine (1993 and 1995), Oder (1997), and Elbe (2002 and 2013). Although there is still a great need for action in the field of flood risk management, nowadays the main focus is the fight against floods. The focus is progressively moving towards heavy rainfall and flash floods.

Heavy rainfalls and resulting flash floods can potentially hit any region and are independent of the location to larger watercourses. In recent years heavy precipitation events hit cities like Dortmund (2008), Münster (2014) and Aachen (2018). But also internationally, heavy rainfalls, such as for example the cyclone Idai in Mozambique, Zimbabwe, and Malawi (2019), flooded entire areas of the countries with heavy precipitation.

The most crucial issue heavy precipitation causes is that at the point of impact everyone is endangered and even small thunderstorm cells can lead to severe local floods with high damages. Thus, classic flood protection concepts cannot simply be transferred to protection against heavy precipitation events. Climate models point to a stronger trend for extreme events. For the future, this might lead to an increased frequency and intensity of heavy rainfall events resulting in high damage.

The first lecture block entitled "**Events**" is dedicated to heavy rainfall and flash flood events of the past. Speakers will present, who either eye witnessed such dramatic events or were responsible for civil protection during or after an event. The aim is to learn from the experience of these events and to be able to plan better and more appropriate precautionary measures.

In the second lecture block "**Data**", data availability, data quality and early warning systems will be addressed. A challenge of heavy precipitation events is the lack of high-resolution precipitation forecasts in real time as a basis for early warning systems. Even today, modern precipitation radars are often insufficient in their resolution to enable local predictions with appropriate accuracy.

Consequently, it is necessary to develop solutions for sustainable protection against the effects of heavy rainfall through new "**Models**". For this purpose, it is necessary to provide suitable precipitation models, runoff models, damage models, and early warning systems that meet the special challenges of heavy precipitation.

"Prevention" against heavy precipitation affects every single individual and various precautionary methods such as information prevention, behavior prevention, building prevention, area prevention and risk prevention, are available for protection. At the IWASA, concrete projects to improve preparedness for society, as well as, individuals will be presented during the fourth lecture block.

Finally, the lecture block **"Measures"** is dedicated to real projects protecting against heavy rainfall. At this point, projects at regional, state, and federal level in addition to concrete projects with associations and specialist societies are presented. The aim is to show the range of different possibilities and measures in the fight for an improved flood protection.

As in previous years, a large number of new developments will be presented and discussed at the IWASA. Accordingly, the individual lecture blocks were chosen as follows:

- "Events"
- "Data"
- "Models"
- "Precaution"
- "Measures"

The IWASA, organized by the IWW, has established as an important meeting and information point frequently used by expert groups. It addresses primarily engineers and natural scientists from the fields of hydraulic engineering and water management, but interested people from all fields are welcome. Because of the high thematic relevance, we expect more around 500 participants from home and abroad. In the foyer, companies are given the opportunity to present themselves. This provides further insights into the current state of hydraulic engineering and water management, which is not limited to the topic of the symposium.

The event takes place at the Technology Center at Europaplatz Aachen (AGIT). No registration is required; participation is free. Amongst others, this is made possible by the friendly support of the Ministry for Environment, Agriculture, Nature Conservation and Consumer Protection of the State of Nordrhein-Westfalen, the proRWTH and the Friends association of the IWW.