Addressing climate change in urban drainage using climate data and communication to the public

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Introduction

Climate change has immense consequences for urban drainage infrastructure. Not only will more extreme rainfall lead to more severe flooding and sewer overflows, but more extreme heat, longer dry periods, and sea level rise will affect the performance of blue-green infrastructure and wastewater treatment plants, and have cascading effects on water quality. However, we, as urban drainage engineers and researchers, are not doing enough to combat climate change and adapt to it. Part of the problem is a lack of knowledge on how to incorporate climate change into our work and lack of awareness on how to use our role to inform society.

Workshop description and schedule

The goal of this full-day workshop is to provide the urban drainage community with the foundation to address climate change in their projects and in communication efforts to the public.

The former, addressing climate change in projects, will focus on incorporating the impacts of climate change into technical analyses (e.g., urban drainage models) through the use of climate data. The latter, communicating to the public, will be centred around the topic of scientific neutrality and our responsibilities as researchers to inform society.

The workshop is structured into three main parts: (1) using climate change data for urban drainage modelling, (2) the position of researchers to inform society about climate change, (3) closing discussion and future perspectives.

1) **Using Climate Change Data for Urban Drainage Modelling** *(08:30 – 12:00, with a coffee break: 10:00 – 10:30)*

In the first two hours, we will present the fundamentals and best practices for using climate data as well as the challenges associated with its use, particularly in the urban drainage community that often requires high temporal and spatial resolution rainfall data. This presentation will be followed by a discussion between the attendees and climate scientists (invited to join the workshop) to examine remaining needs and questions about the use of climate data in urban drainage modelling. In particular

we will discuss the data needs from emerging subfields of urban drainage and demands coming for multidisciplinary studies that may broaden the scope of data use in water sciences.

Key topics of the morning session include:

- What data are available from climate models, including data from general circulation models, regional climate models, and state-of-the-art convection permitting models (Ban et al., 2021; Benestad, 2016)?
- What post-processing (e.g., bias-correction) needs to be done in order to make these data useable for the urban drainage community?
- How have these needs and data changed in recent years, and how should they continue to change?

2) The Position of Researchers to Inform Society about Climate Change *(13:00 to 14:30)*

In the afternoon, we will break into small groups to discuss the topic of scientific neutrality that has recently sparked debate among climate scientists (van Eck et al., 2024). Discussions will explore how researchers' roles can benefit professionals and citizens to act on climate change (Dupont et al., 2024).

Potential discussion points include:

- What is our responsibility as researchers to communicate to professionals and citizens (van der Bles et al., 2019) about climate change?
- How should our social media presence reflect this role?
- Shared examples for effective communication about climate change

3) Closing Discussion and Future Perspectives *(15:00 – 16:30)*

Based on the initial discussions about climate data and scientific neutrality, we will summarize key discussion points and open questions, and then identify future directions for urban drainage researchers and engineers.

Workshop specifics

Organizing committee

The workshop is organized by the informal climate change adaptation working group linked to the joint committee and on urban drainage (JCUD) and the Urban rainfall working group. The group aims to discuss the place of climate change in the urban drainage research community and bring disciplines into this conversation.

The workshop is organised by:

- Lauren Cook, Group leader at EAWAG (Switzerland), doing research on multifunctional blue-green infrastructure and climate model downscaling for urban drainage modelling,
- Gersende Fernandes, Postdoc at INRAE (France), doing research on infiltration monitoring and modelling and climate change adaptation,
- Hugo Paris, Postdoc at INSA Lyon (France), doing research on embedding socio-ecological challenges to engineer's education,
- Vincent Pons, Postdoc at NTNU (Norway) and LTU (Sweden), doing research on Blue-Green Infrastructure, modelling, and climate change adaptation,

Intended audience

Researchers and/or professionals in urban drainage

Projected number of participants

10 to 20 participants (+ organisers)

References

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