



## The AI4UrbanClimate working group initiative

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Over the past decade, artificial intelligence (AI) and machine learning (ML) have rapidly advanced, becoming powerful tools in weather forecasting and climate research. At present, there is an increasing interest in integrating ML and recent AI developments into urban climate studies. This fast-evolving field encompasses a wide range of research approaches. Models with varying levels of complexity have been developed to make, for example, frequent predictions at point locations or high-resolution simulations at the scale of a neighborhood, city, or many cities for one or multiple (bio)meteorological variables. AI- or ML-based approaches are also used to create scenarios that examine the impacts of urban greenery or different global warming levels on urban climate, supporting the identification and design of future outdoor cool spaces or to assess individuals' thermal comfort. In addition, ML techniques are applied in diverse ways to generate boundary conditions for micro-scale models.

The emergence of this very broad and dynamic research field comes with new challenges. It is, for example, unclear what is contained under "AI/ML for urban climate" as there are a multitude of approaches, spatial-temporal scales, applications and datasets being used. This makes it unclear in what direction the field can and should evolve and what the priorities are. Moreover, as scientists meet in an urban climate or AI context, there is a lack of a common research network leading to a high chance of duplicate research efforts. Hence, by setting up the urban climate-AI working group AI4UrbanClimate, we aim to bring people together with similar research interests to define a common understanding of AI/ML for urban climate applications by reviewing existing research. International collaboration within the AI4UrbanClimate initiative will make it possible to identify persistent challenges, gaps and priorities to advance this research field in a coordinated way to improve and accelerate ongoing research in this field.

As a first activity we try to get an overview of ongoing work in AI/ML for urban climate. Only then it is possible to create the highly needed benchmarks that are suited as raised within the AI4UrbanClimate working group. Outcomes of a questionnaire and the kick-off meeting will be presented and you will learn about the opportunity on how to join and collaborate in this novel AI4UrbanClimate community.