## CliWaC

Fresh water is a key resource for human life, natural and agricultural ecosystems, and many aspects of societal and economic systems. Climate change will affect the availability and the quality of fresh water particularly, through altering the characteristics and frequency of extremes such as droughts and flooding. This in turn puts the functioning of water-related sectors and ecosystem services at risk. The Einstein Research Unit **Cli**mate and **Wa**ter under **C**hange (CliWaC) is a research initiative which brings together scientific and practical expertise to support the governance of mitigation and adaptation measures in response to climate change. Four overarching research questions are pursued:

1. How will climate change affect different human-environment systems with respect to waterrelated hazards and the availability of good quality water?

2. What potential solutions exist for managing water resources and making human-environment systems resilient to water-related hazards?

3. Which forms of governance are available for coping with emerging challenges and implementing solutions and how can these be coordinated between stakeholders across administrative borders?

4. Which barriers resulting from legal issues, administrative constraints, public perception and related adaptive practices can be identified and how can they be overcome?

In addressing these questions, CliWaC focuses on the model region Berlin-Brandenburg, as it is characterised by a complex combination of contrasting natural, societal and political conditions. Additionally, the different needs, options and perceptions of urban and rural areas provide a challenging setting. Water-related research topics addressed by CliWaC are (i) ecosystems, biodiversity and ecosystem services, (ii) flood and wastewater management and (iii) water resource management. With a strong transdisciplinary approach, the research will focus on three case studies: a lake system and its surrounding area; the Spree catchment; and urban infrastructure that is heavily impacted by extreme rainfall events. They represent significantly different systems and challenges embedded in diverse social-ecological contexts. CliWaC is composed of three closely interlinked parts that will proceed in parallel. Part A quantifies present and future drivers of risks and their uncertainty. Part B assesses the impacts of climate change and actions in and across sectors. Part C addresses strategies for implementation of action. In support of these aims, high-resolution climate model simulations of extreme hydrological events, decadal predictions and climate projections will be performed for the Berlin-Brandenburg region.