



**The DFG Research Training Group on Urban Water Interfaces (UWI) invites to a
guest lecture by**

Dr. Ilhan Özgen-Xian
**Environmental Modelling Group, Technische Universität
Braunschweig, Germany**
**Earth and Environmental Sciences Area, Lawrence Berkeley National
Laboratory, USA**
Wednesday, 30 March 2022, 2:00 – 3:00 pm
via Zoom

Lecture title: Climate emergency calls for process- based modelling

Abstract

Winter is coming. Climate change has pushed the hydrological cycle of the Earth out of statistical stationarity. We are more frequently observing unprecedented floods, droughts, and other water-driven hazards that result in casualties, infrastructure damage, supply chain disruptions, and even political unrest. Indeed, the United Nations views climate change as the primary threat to humanity that may lead to societal collapse. In order to improve the resilience of our cities and preserve our way of living, we need to understand the potential impacts of climate change on our environment. A crucial subject of such studies is water, predicting its availability and absence and the disruptions it may trigger. Assessing these disruptions is critical to develop mitigation strategies. Here, statistical models that use historical data sets fail to predict previously unobserved extreme events and their impact, which is what we are specifically interested in. Thus, process-based mechanistic models that incorporate physical process understanding are becoming essential to accurately predict previously unobserved events and their impact on our environment. This lecture motivates the use of process-based mechanistic modelling in environmental (engineering) sciences. It discusses the trade-offs inherent in process-based models, such as high computational cost and associated energy consumption, and discusses strategies to cope with these challenges.

About the speaker

Ilhan Özgen-Xian is an Assistant Professor of Environmental Modelling at Technische Universität Braunschweig in Germany and an Affiliate Faculty in the Earth and Environmental Sciences Area at Berkeley Lab, USA. Ilhan works on multi-scale and high-performance computing methods to simulate flow and transport processes in urban and environmental (hydro)systems. He is one of the main developers of SERGHEI, a portable high-performance code for environmental applications with a fully dynamic shallow flow core.

Join Zoom meeting:

<https://tu-berlin.zoom.us/j/61981489789?pwd=YWt6d1lnUjE2NWd4ZWpjdVB5SjNNUT09>

Meeting-ID: 619 8148 9789

Passcode: 754574