



Panta Rhei – Everything Flows
Change in Hydrology and Society
IAHS Scientific Decade 2013-2022
www.iahs.info/pantarhei

Details of the Proposal

Title of the Working Group

Evolving Urban-Water Systems

Abstract of the proposed research activity

Urban-water systems can be described as complex coupled natural-human systems characterized by feedbacks, patterns, cross-scale interactions, etc. For example, the interaction between urban growth and flow regimes can be seen as positive, reinforcing feedback loop, where increasing urbanization drives the regime away from its original, non-urbanized state, and this in turn can modify or condition human activities. The pattern that cities take within or across basins, and pattern heterogeneity, influence travel times and transport processes, affecting the hydrological and biogeochemical response of urban systems. This working group will work towards developing a deeper understanding of the long-term behavior of urban-water systems by identifying and characterizing emergent properties across spatiotemporal scales. The goal is to use such emergent properties to understand similarities and differences across urbanization and physical gradients. The work will be performed in the context of a changing climate and ever-changing human responses to evolving regulations. We envision collaboration on this work through meetings and workshops, publications, targeted research opportunities, and student exchanges.

Panta Rhei Research Themes, Targets and Science Questions addressed by the Working Group

This working group will make contributions to all the targets set by Panta Rhei (i.e., understanding, estimation and prediction, and science in practice). Also, the work is directly or indirectly related to all the science questions of Panta Rhei. It will help identify key gaps in our understanding of hydrological change in urban-water systems. It will generate new understanding that could be used to inform policy and regulatory decisions in urban-water systems.

Societal impact of the Working Group activity

The interaction between water and urban systems is typically characterized by critical water-related issues such as the provision of water for growing human populations, protection against floods, water quality, ecosystem degradation, and biodiversity loss. In this context, the working group, by advancing a robust understanding of urban-water systems, has potential to contribute to society. The working group will develop and implement

strategies to bring the understanding gained from this work to bear on our cities and local communities through engagement with key decision-makers and citizen participants. The strategies will try to form innovative pathways for reaching out to local governments responsible for policy making and regulatory oversight, engineering associations, watershed groups, etc. We will use both existing and new connections when developing our strategies.

List of Participants

Name of Participant	Affiliation (full address and email)	Role in Working Group (Chair or Member)	Main expertise
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