INXCES

INnovations for eXtreme Climatic EventS

INXCES will develop new innovative technological methods for risk assessment and mitigation of extreme hydroclimatic events and optimization of urban water-dependent ecosystem services at the catchment level, for a spectrum of rainfall events. It is widely acknowledged that extreme events such as floods and droughts are an increasing challenge, particularly in urban areas. The frequency and intensity of floods and droughts pose challenges for economic and social development, negatively affecting the quality of life of urban populations.

Prevention and mitigation of the consequences of hydroclimatic extreme events are dependent on the time scale. Floods are typically a consequence of intense rainfall events with short duration. In relation to prolonged droughts however, a much slower timescale needs to be considered, connected to groundwater level reductions, desiccation and negative consequences for growing conditions and potential ground – and building stability. INXCES will take a holistic spatial and temporal approach to the urban water balance at a catchment scale and perform technical-scientific research to assess, mitigate and build resilience in cities against extreme hydroclimatic events with nature-based solutions.

INXCES will use and enhance innovative 3D terrain analysis and visualization technology coupled with state-of-the-art satellite remote sensing to develop cost-effective risk assessment tools for urban flooding, aquifer recharge, ground stability and subsidence. INXCES will develop quick scan tools that will help decision makers and other actors to improve the understanding of urban and peri-urban terrains and identify options for cost effective implementation of water management solutions that reduce the negative impacts of extreme events, maximize beneficial uses of rainwater and stormwater for small to intermediate events and provide long-term resilience in light of future climate changes. The INXCES approach optimizes the multiple benefits of urban ecosystems, thereby stimulating widespread implementation of nature-based solutions on the urban catchment scale.