



## **Multiple effects of hydrological connectivity on floodplain processes in human modified river systems**

Thomas Hein (1,2), Elisabeth Bondar-Kunze (1), Stefan Preiner (1), Walter Reckendorfer (2), Michael Tritthart (3), Gabriele Weigelhofer (1), and Nina Welti (4)

(1) WasserCluster Lunz - biologische Station GmbH, BioFrames, BioFrames, Lunz, Austria (thomas.hein@boku.ac.at), (2) University of Natural Resources and Life Sciences, Vienna Inst. of Hydrobiology and Ecosystem Management, (3) University of Natural Resources and Life Sciences, Vienna Inst. of Water Management, Hydrology and Hydr. Eng., (4) National Centre for Groundwater Research and Training, University of Queensland, Brisbane, School of Civil Engineering, Australia

Floodplain and riparian ecosystems provide multiple functions and services of importance for human well-being and are of strategic importance for different sectors at catchment scale. Especially floodplains in the vicinity of urban areas can be areas of conflicting interests ranging from different land use types, flood water retention, drinking water production and recreation to conservation of last remnants of former riverine landscape, as it is the case in floodplains in the Danube Nationalpark downstream Vienna. Many of these ecosystem functions and services are controlled by the exchange conditions between river main channel and floodplain systems, the hydrological connectivity. At the same time these systems have been highly altered and especially the connectivity has been severely impaired. Thus, far ranging effects of changes in hydrological connectivity at various levels can be expected in altered floodplain systems. The aim of this presentation is to explore the complex control of different ecosystem functions and associated services by different parameters of hydrological connectivity, ranging from nutrient, sediment and matter dynamics and biodiversity aspects. Increasing connectivity will be shown to impact microbial dynamics, sediment-water interactions, carbon dynamics and trophic conditions, thus affecting the fundamental functions of particular floodplain systems at various spatial and temporal scales. Based on these changes also the provision of ecosystem services of floodplains is affected. The results clearly show that hydrological connectivity needs to be considered in a sustainable management approach.