



UFZ-Seminar „Water and Environment“



21th November 2016, 3pm

Saal, Brückstr. 3a, Magdeburg

Michael Mutz

Brandenburg University of Technology, Department of Freshwater Conservation gives a talk on:

Drying and moving sediments - overlooked but coming, sediment metabolism at hydrological extremes

Wenn Fließgewässer an ihre Grenzen kommen - Sedimentmetabolismus während hydrologischer Extreme

Drought and heavy rainfall are short-term extremes in the hydrological drivers of temperate stream ecosystems that are predicted to be further pronounced with change of climate and land use. Consequently episodic ephemeral reaches will expand, and with the increasing load of fines from catchment erosion the percentage of stream bed covered by patches of quasi constantly moving bed forms will rise. In experiments in outdoor flumes and laboratory microcosms we investigated how desiccation and shifting of sediments affect the sediment microbial metabolism. Shifting of sands had surprising little effect on the quality of particulate organic matter embedded within migrating sand ripples. However, microbial community respiration and primary production were severely curbed in this highly dynamic habitat disregard of the sediment organic matter quality and quantity. The desiccation reduced community respiration and the strength of this response was related to the humidity in the sediment pore space during drought. Resilience of the metabolic function to both stressors was surprisingly fast, although clear changes of the community structure were observed from pre to post stress. Our findings suggest that streams C-transformations are well buffered against periods of extreme hydrological stress, while these change the structure of the obviously functionally redundant microbial community.