



## UFZ-Seminar „Wasser and Environment“



29th January 2016, 11am

Saal, Brückstr. 3a, Magdeburg

### Marc Piepoch

University of Montana, Institute on Ecosystems

gives a talk on:

#### **Biofilm diversity, ecosystem production, and ecological restoration of river-floodplain landscapes in the Rocky Mountains**

River-floodplain landscapes are characterized by shifting habitat mosaics and are governed by flood pulses that link terrestrial and aquatic reservoirs and enhance variation in factors controlling species diversity such as disturbance and resource availability. The fundamental argument for floodplains recognition as among the most diverse and productive ecosystems worldwide is that their exceptional biophysical complexity at the landscape scale provides a plethora of niches for both aquatic and terrestrial species. At the Rocky Mountain-Great Plains interface, Montana's riverscapes span from unique and pristine floodplains to highly simplified rivers with a history of mining pollution. In the first part of this talk, I will present research linking biogeochemical variation, microbial diversity, and ecosystem primary production within and among ten different river-floodplain landscapes. Results of this research indicate that along the hierarchical organization of fluvial systems, floodplains constitute a vector of maximum environmental variation and a major landscape filter for bacterial species in biofilm communities. In particular, Montana's river systems with more severe N-limiting conditions exhibit up to 25% abundance of N-fixing cyanobacteria in their benthic communities, greater biofilm diversity, and greater gross primary production at the ecosystem level. Then, I will finally discuss results of ongoing research addressing the capacity of ecological restoration to increase trout abundance in the Clark Fork River: a large river with a century of heavy metal pollution that is currently being restored. Despite all the remediation efforts that are intended to recover the ecosystem integrity of the Clark Fork River, river and floodplain restoration is occurring under nutrient-rich conditions associated

with undefined non-point sources that may ultimately diminish the ability of trout populations to recover even after the heavy metal pollution has been removed.

**If you are interested to join via Video-Conference to UFZ Halle or UFZ Leipzig, please send a note to [nina.baumbach@ufz.de](mailto:nina.baumbach@ufz.de) by Friday, 22.01.16, 12am.**