

EGU2020-20555

<https://doi.org/10.5194/egusphere-egu2020-20555>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



The effect of stream microbial inoculation on in-stream carbon processing

Jakob Schelker^{1,2}, Florian Caillon^{1,2}, Katharina Besemer², Peter Peduzzi¹, and Astrid Harjung^{1,2}

¹University of Vienna, Dept. of Limnology & Bio-Oceanography, Vienna, Austria (jakob.schelker@univie.ac.at)

²WasserCluster Lunz GmbH, Lunz am See, Austria

Hydrological events mobilize chemically diverse dissolved organic matter (DOM) from soils to streams. Further, such events can also cause an influx of soil microbial life into fluvial systems. Here we present results from the HYDRO-DIVERSITY project, which aims to investigate the dynamic transfer of DOM and microbial life from catchment soils to streams, as well as their downstream fate. We studied the microbial community composition and DOM quality using 16S Illumina sequencing and fluorescence and absorbance spectroscopy. Data from small streams showed strong changes in DOM composition and in the microbial community delivered from soils during hydrological events. Moreover, we performed a flume experiment, in which soil microbial inoculation and the processing of DOM across different biofilm ages were evaluated. As such, biofilm age did not directly affect the establishment of soil microbes in the stream ecosystem. However, in-stream processing of soil DOM appeared to be affected by the inoculation event. This poses the fundamental question, if the processing of DOM in streams and rivers depends on the transient presence of specific soil microbes in stream ecosystems. Overall our results show that soils provide a dynamic and relevant influx of microbes and DOM to first order streams and that this dynamic influx likely affects microbial community dynamics of downstream fluvial networks as well as in-stream DOM processing.