



Saisonal dynamics of concentration and optical properties (aromaticity and molecular weight) of dissolved organic carbon in a restored percolation mire (Burgwald, Hesse)

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Although peatlands are significant carbon storages, the understanding of the export of dissolved organic carbon of percolation mires is still insufficient. Especially in the low mountains areas in middle Europe percolation mires were widely spread before they were cultured. Currently the questions arises, whether it is necessary to restore such percolation mires since in one hand it is not an easy feat and in the other hand the functioning of their organic matter turnover is not well studied. Thus, in this study we will investigate and identify the seasonal dynamics of concentration and optical characteristics of dissolved organic carbon in a restored percolation mire in the low mountain ranges (Burgwald, Hesse, Germany) to assess the functioning in exporting dissolved organic carbon, especially during spring and early summer, when the influence of an increasing dehydration is recognizable.

The study took place in the restored percolation mire Franzosenwiesen, located in the Burgwald Forrest near Wetter (Hesse, Germany). This moor is the last percolation mire to be found in the German low mountain range. During the period of February to July 2018 water samples were taken weekly at different locations within the percolation mire and at the outlet to analyze concentration and optical characteristics of dissolved organic carbon. Additionally, water level was recorded automatically at the inlet and at the outlet of the percolation mire. Concentration and optical characteristics (aromaticity and molecular weight) of dissolved organic carbon were analyzed by a TOC-Analyzer (Shimadzu, TOC-L), a fluorescence spectrometer (RF-6000, Shimadzu) and a UV-VIS spectrophotometer (Genesys 10S, ThermoFisher), respectively. Factor analysis and

The results indicate that the dynamics of dissolved organic carbon in the restored percolation mire Franzosenwiesen are contrary to the dynamics predicted in the literature. The quality of dissolved organic carbon in the percolation mire during the summer period is growing instead of declining. The results of this study underlines the important role of percolation mires as carbon storage and demonstrated the importance to restore similar destroyed percolation mires, which still exist in the low montain range in middle Europe.