



Source and composition of surface water dissolved organic matter (DOM) and the effect of flood events on the organic matter cycling

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Floodplains are often simultaneously affected by land use change, river regulation and loss of hydrological dynamics which alter the surface water connectivity between floodplain and river main channel. These alterations can have significant impacts on the sources of organic matter and their degradation and thus, the carbon cycling of riverine landscapes. Although floodplains are known to be important sources of dissolved organic matter (DOM) within watersheds, reduced hydrological connectivity impair their role.

The key questions of our research were to determine i) to what extent the degree of connection between the Danube River and its floodplain controlled the DOM composition with its backwater systems, and ii) what were the effects of the DOM changes on carbon cycling in floodplains during two flood events with different magnitude?

In this study we report on the variations in DOM spectrophotometric properties of surface waters in different connected floodplain areas and during two flood events of different magnitude in a section of the Alluvial Zone National Park of the Danube River downstream Vienna, Austria. Two backwater floodplain systems were studied, one backwater system mostly disconnected from the fluvial dynamics except during high flood events (Lower Lobau) and the second one, recently restored and connected even during mean flow conditions (Orth).

Fluorescence excitation-emission matrix (EEM) spectrophotometry and water chemical analyses were applied to investigate the DOM dynamics. In both backwater systems 15 sites were sampled monthly for two years and every second day during a flood event.