



## **The role of floodplain connections in controlling dissolved organic carbon quality and export in coastal urban sub-basins**

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This study examines the role of fluvial wetlands (those connected to the stream via floodplains) in controlling DOC quality and export in urban systems. Human activity in urban basins may impact both DOC quality and export, but river-wetland complexes may dampen this signature. These dynamics are important to understand because the processing of DOC can affect the degree to which land-use affects a number of environmental problems: the eutrophication of coastal ecosystems, interactions with the nitrogen cycle and nitrogen retention, and feedbacks with climate system.

We performed synoptic surveys above and below wetlands in urban and rural sub-basins in the headwaters of the Ipswich and Parker River watersheds (Plum Island Estuary Long Term Ecological Research) in northeastern Massachusetts, US. We also instrumented wetland sites to sample wetland sites during storm events. We used the optical characteristics of DOC determined by fluorescence and absorbance to quantify DOC quality. Excitation Emission Matrices (EEMS) were used to determine the relative importance of autochthonous and allochthonous sources of DOM. In addition, we measured metabolism and denitrification to correlate fluorescence characteristics to ecosystem processes.

Preliminary results suggest that high flow conditions, DOC export increases, and over-land and sub-surface flow-paths facilitate leaching of more recalcitrant forms of DOC from wetland plant sources. Under low flow conditions, autochthonous sources of DOC from the stream channel may be more prevalent. In contrast, wetlands in rural areas are less flashy and sources of DOC more consistent with autochthonous sources.