



## **Evaluation of the in-channel interactions of organic carbon during transport: an in-stream source of DOC?**

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Despite wide spread investigation of gaseous exchanges and fluvial losses via dissolved organic carbon (DOC), our understanding of the carbon budget in peatland systems is still lacking completeness. For example, there is currently a lack of research investigating particulate organic carbon (POC) in the fluvial system, including its variability, yields and the consequences of elevated concentrations. This paper investigates the later of these issues and is concerned with the potential transformations of POC that might occur during transport in both experimental and field scenarios.

Using novel techniques a method was developed to analyse the fine-scale variability of organic particles sourced from peat profiles that are reworked via suspension in the fluvial system. Such particles are the constituents of POC. In this way it is possible to assess the relative changes in the make-up of POC given varied periods of transport and so determine if transformations of this form of OC occur in the fluvial system. For comparative purposes, DOC concentrations were also analysed to explore the interactions of these two forms of fluvial OC.

Mixing experiments demonstrate the dissolution of POC to increase dissolved concentrations and suggest a mechanism of the physical degradation of fine OC to size fractions classed as DOC. Similar trends are observed across a monitoring network throughout degraded systems in the southern Pennines, UK. These data suggest that elevated POC concentrations in the fluvial system may have impacts on water quality as well as the carbon budget of eroding systems.