



The role of topography and vegetation cover upon riverine dissolved organic carbon and water colour in peatlands

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Riverine dissolved organic carbon (DOC) is predominantly controlled by soil type and previous research has shown that peatlands are an important source. However, little is known about the controls upon riverine DOC that have not undergone major disturbance from drainage or burning in blanket peatlands. Vegetation cover and topographic characteristics of 119 peatland catchments in northern England were determined across three basins using 0.5 m resolution colour infrared aerial images and digital elevation models respectively. These characteristics were then linked to DOC and water colour levels from their respective catchments gathered during six repeated sampling campaigns. The topographic characteristics of slope standard deviation and mean slope were shown to be the strongest (and negative) controls on DOC and water colour using stepwise regression. Bare peat and Ericaceous shrubs showed a weak but positive role in determining riverine DOC in a number of the models. There were a number of differences in model output depending on the basin. For example, Ericaceous shrubs were notably a more dominant control in one basin, but despite their presence, they did not feature in the regression models for the other two basins. The strength of topographic predictors in our study, together with the weaker role of vegetation type, is of use to water companies who source water from blanket peatland covered catchments and who wish to develop tools to justify land management decisions at spatial scales relevant to the practitioner. For example, it is possible to predict simply from DEMs and aerial imagery which tributaries will produce lower DOC concentrations and water colour and therefore which areas may be most suitable for raw water intakes.