Dissolved Organic Carbon and Peatland Restoration

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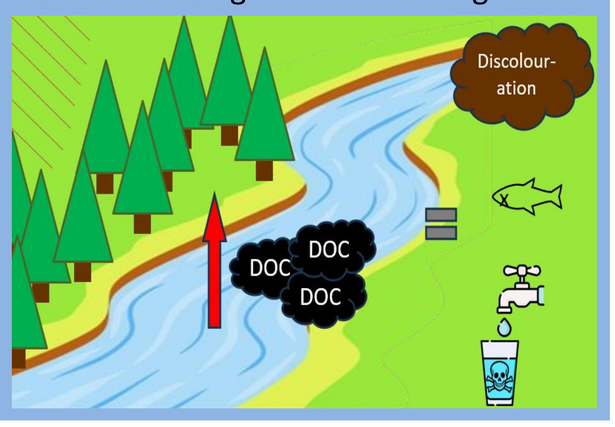
Introduction

Dissolved Organic Carbon (DOC) is just one indicator of water quality. It can be released in high amounts into rivers following disturbance, e.g., following drainage works, forestry, or from a degraded peatland. I am comparing various innovative and standard forestry felling and peatland restoration techniques to see their impact on DOC levels in surrounding rivers. I am also looking at a range of other water quality impacts following:

- Mulching and ground smoothing works.
- Multiple forest drifts felled into one and then ground smoothing.
- Conventional tree harvesting.

Disturbance can release DOC into rivers and result in discolouration, damage to the aquatic environment and poor drinking water quality.



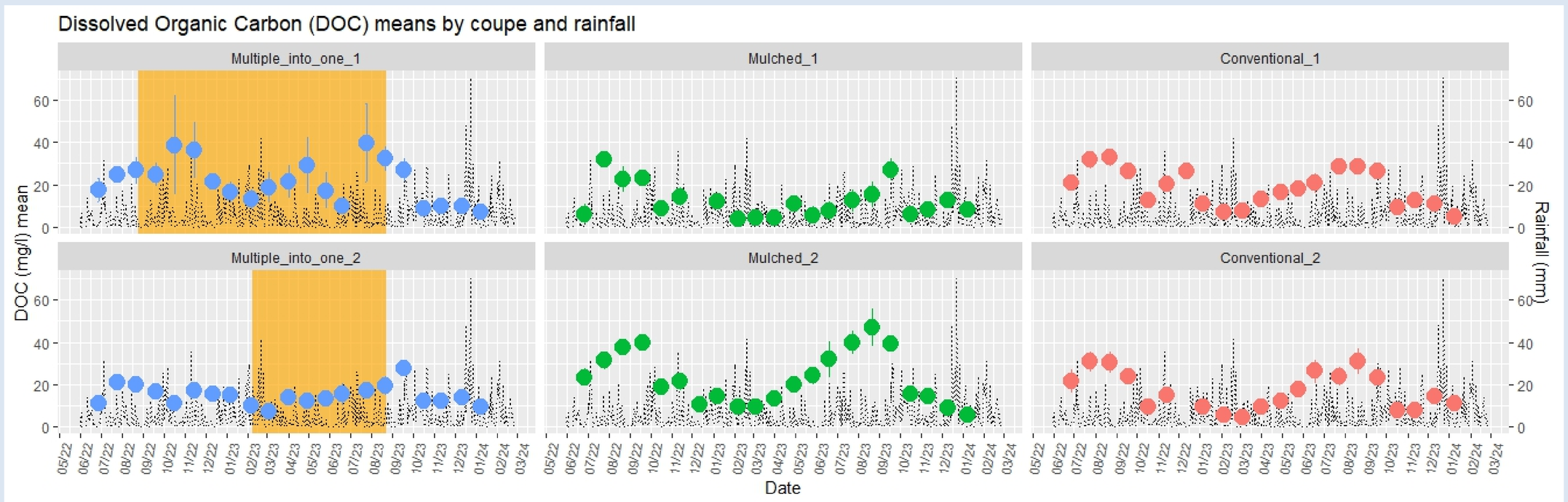
Methods

I take water samples from rivers and filter them. In the lab I analyse the samples for DOC – as well as a range of other water quality parameters.

(a) Grab sample taken from river; (b) water sample about to be filtered; (c) DOC analyser.

Results

This graph clearly shows the seasonality in DOC content at my study sites. There was also a drop in DOC after restoration works were completed at the 'multiple drifts into one' sites (left), suggesting that this restoration method may be beneficial in reducing DOC run-off.



Dates when felling and restoration works were ongoing. Restoration on the multiple drift sites has been completed. Restoration on the four other sites is due to start spring 2024.

Restoration Techniques

Multiple into one: felling multiple rows of trees into one area. Making brash (branches, foliage) easier to remove and keep away from rivers.

Mulching: mulching whole trees and leaving a scattered layer of woodchips across the felled area.

Ground smoothing: flipping stumps upside down and closing drains. The peat and vegetation are smoothed out. The water table rises.

Conventional harvesting: standard method of felling. More brash left on site which degrades and can have negative effects on rivers.

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