



The effects of *Calluna* cutting and burning on soil pore water DOC – are they only surface deep?

Suzane Qassim (1), Simon Dixon (1), James Rowson (2), and Fred Worrall (1)

(1) Durham University, Earth sciences, Durham, United Kingdom (s.m.qassim@durham.ac.uk), (2) Edge Hill University, Department of Geography and Geology, Ormskirk, United Kingdom

Dissolved organic carbon (DOC) is carbon lost from peatlands via the fluvial pathway and is the major component of water colour. It also is costly to remove during the water treatment process. Previous studies have found that the top ten centimetres of peatland soil pore water has the greatest association with surface water DOC concentration (DOCc). An important question of interest to peatland stakeholders is: can DOCc at the catchment scale be significantly affected by land management upstream? From this the question arises: do management effects manifest themselves differently in the upper ten centimetres of the peat than at greater depths? And further: are the effects observed in the top ten centimetres of the peat more strongly correlated to surface water DOCc than those from greater depths?

The research presented in this poster, is on data gathered between, May 2008 – January 2013 in the Goyt Valley, Peak District National Park, UK. DOCc was investigated from sites subjected to differing *Calluna vulgaris* management techniques on both wet and dry heathlands. There are eight study sites with different treatments: control; managed burning; vegetation cutting and mulching; and, vegetation cutting and removal. There are six, replicate, one metre depth dipwells (apertures every ten centimetres), six surface water runoff traps and four ten centimetre sampling depth dipwells per site. Water table depth was monitored and samples were collected monthly from both the one metre dipwells and runoff traps over a four year period. As of May 2012 samples were also obtained from the ten centimetre depth dipwells as well. Monthly rainfall DOCc and daily surface water DOCc (in a nearby stream) were also measured to compare to the soil pore water DOCc gathered monthly.

To address the aims of this study, data from the ten centimetre dipwells will be compared to those from the one metre dipwells. Across the four year period DOCc measured from the one meter dipwells, showed that there were significant differences between treated sites in terms of DOCc ($P = 0.002$; $R^2 = 26.83\%$). The site where vegetation was cut and removed had significantly higher DOCc than the burned and cut and mulch sites. When comparing the different dipwell depths it was found that the site means did not vary greatly between the two depths. However the one meter depth dipwells had higher variation (coefficient of variance = 66) than the ten centimetre depth dipwells (coefficient of variance = 38). This on-going study will contribute toward the understanding of land management effects on soil pore water DOCc and their relationship to catchment scale DOC dynamics.