



A new mechanism for dissolved and gaseous carbon dioxide production in peat

J.G. Rowson (1), F. Worrall (1), N. Ostle (2)

(1) Department of Earth Sciences, Durham University, (j.g.rowson@durham.ac.uk), (2) CEH Lancaster

Major concerns have been raised about whether northern peatlands are a sink or source of carbon, the amount of carbon currently being lost, and by what mechanism. This study presents a new mechanism relating dissolved CO₂ and gaseous CO₂ to both water table depth and soil temperature, where rainfall determines whether the CO₂ is flushed into the drainage system or is released gaseously. Using this mechanism, in conjunction with a suite of environmental measurements, the gaseous carbon budgets were calculated and ground truthed, using IRGA and water samples, for several different restored sites from both the North and South Pennines, UK. This study shows where sinks and sources of carbon are, and discusses the application of these mechanisms for other peatlands, and how these equations can be used to further describe peatlands.