



## **The impact of changing acidity on carbon and nitrogen cycling in peatlands**

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Peat soils have traditionally sequestered vast stores of carbon (C), but since the onset of the industrial revolution and the growth of agriculture, these ecosystems have been exposed to increased nitrogen (N) and sulphur (S) deposition, increasing the acidity of peatlands and potentially threatening their function as carbon sinks. While N deposition remains high, S deposition has declined sharply in the last few decades due to legislation on the use of fossil fuels, and many ecosystems are consequently recovering from acidification. We are testing the hypothesis that peatland C and N cycles are being strongly altered by acidity change and that rising pH will increase the loss of C and N as dissolved organic matter (DOM), due to both increases in biological production and increasing DOM solubility, via field experiments at two UK peat ecosystems exposed to low and high levels of N pollution. We present results from microcosm and field pilot studies in which solutions aimed at replicating historic S deposition peaks, and more alkaline pre-industrial conditions, have been used to manipulate soil pH, and initial measurements of C and N losses in gaseous and dissolved forms.