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Measuring the impact of gully erosion on peatland carbon balance

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Gully erosion impacts on the carbon balance of peatlands in three ways 1) direct erosional loss of carbon, 2) Enhanced near gully decomposition due to reduced water tables, and 3) Loss of primary productivity in gullies. Representative impacts of the first two mechanisms can be derived from detailed mapping of gully extent, the third requires direct measurement of carbon sequestration. In this paper rates of sequestration at both gully edge and intact sites are compared based on multiple approaches to peat core dating (timescales of circa 30 years) , and compared with equivalent data at millennial scales estimated from published peat growth rate data. The results indicate that whilst there is a clearly demonstrable reduction in carbon sequestration due to gully erosion that at the landscape scale the direct impact of gullying through POC loss and reduced productivity is of greater importance