Carbon exchange in the restiad peatlands of New Zealand

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The restiad peatlands of New Zealand exist outside of the usual climatic niche occupied by temperate bogs. The main peat former *Empodisma robustum* (family Restionaceae) is unusual in having both xeromorphic and hydromorphic adaptions. The combination of these traits appears to be key to the existence of "restiad" bogs under relatively warm conditions with a high seasonal moisture deficit. Here we compare ecosystem scale carbon fluxes from two restiad peatlands – one drained, the other hydrologically pristine – and place this in the context of past ecohydrological work carried out on these peatlands. Our results suggest restiad bogs are exceptionally strong contemporary carbon sinks and are able to remain so, but at a reduced level, even several decades after drainage. Long term carbon accumulation rates determined from cores are an order of magnitude smaller than the contemporary carbon sink, suggesting these sites are vulnerable to long-term or intermittent influences on their carbon sink status, such as vegetation change and fire.