Investigating the effect of ditch blocking on the CH4, CO_2 and DOC balance of blanket peatland

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A fully-replicated, long-term field trial was conducted on a blanket peatland in a catchment of the Upper Conwy in North Wales. Twelve ditches were investigated. After an initial period of monitoring, four of these ditches were left open, four were dammed with peat dams spaced a few metres apart and four were partially infilled with peat through having their sides reprofiled and were also dammed every few metres along their length. Monitoring took place over four years. Substantial changes in hydrological conditions occurred after ditch blocking, with a gradual increase in baseflow occurring over the four years of study and changes to the flowpaths. However, ditch blocking had a small effect on water tables which were already quite shallow (close to the surface) at the site. Waterborne carbon fluxes from the site differed in terms of the pathway taken but not in terms of overall load. CH4 fluxes and global warming potential (GWP) showed no systematic variation between the drained and re-wetted blanket peatland or between the different types of re-wetted peatland in the period after management interventions. There was no evidence that CH4 fluxes or GWP changed systematically over time in any of the management interventions (open ditches, dammed ditches, dammed and partially infilled ditches). Overall, GWP was positive; the study peatland, even in restored areas, was radiatively forcing.