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UK GHG Flux Network – Peatlands

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Peatlands occupy 12% of the UK territory and can store large amounts of carbon (C). However, drainage, peat extraction, and other management activities have turned these ecosystems into greenhouse gas (GHG) emitters. Currently, peatlands account for ~ 4% of the UK's total annual GHG emissions. Eddy covariance is considered the best method to measure landscape scale GHG exchange (CO₂, CH₄, N₂O), between the Earth's surface and the atmosphere. Recently many flux towers have been installed on UK peatlands under different land-use and in different condition, with some undergoing restoration. In total there are currently 30 operating, with 9 in Scotland (SCO2FLUX managed by The James Hutton Institute, JHI) and 21 across England, Wales and Northern Ireland (managed by UKCEH), including the Auchencorth Moss ICOS site. As part of the projects, NERC-MOTHERSHIP and SRC-CENTREPEAT, these peatland sites are being harmonised into a network. The data is being analysed using standard protocols in order to generate a powerful dataset to examine the exchange of CO₂ and CH₄ over UK peatlands. Some of the topics being investigated are: the spatial and temporal variability of emissions for all peatland classifications; the main drivers and controlling mechanisms of GHG exchange, such as the effect of water table depth on gas exchange and restoration impacts (e.g. raising water levels in agricultural peatlands); the value and effectiveness of restoration techniques (e.g. the timeline of recovery in the transition from forest to bog); improving the modelling of peatlands in JULES and other land-surface models; ground-proofing data for Earth observation techniques; assessing the contribution of peatlands to achieving net zero; examining the impact of wildfire on restoration from forest to bog.

An overview of the network of sites and some highlights of the analysis to date will be presented.

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