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Peat drainage conditions assessment in Scotland

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Large areas of Scotland are covered in peat, providing an important sink of carbon but also a notable source of emission where peatlands are not in good condition. However, despite data from designated sites that peat degradation is common, a detailed spatial assessment of the condition of most peatlands across the whole of Scotland is missing. An assessment of peatland drainage was carried out at >600 random sampling locations with an expert-based estimation of presence or absence of drainage ditches within a 500 metre block using 25 cm resolution aerial imagery. The resulting dataset was modelled using a scorpan-kriging approach, in particular using Generalised Additive Models for the description of the trend. Remote sensing images from different sensors (i.e. MODIS, Landsat and Sentinel 1 and 2) were used. In particular we used indices describing vegetation greenness (Enhanced Vegetation Index), water availability (Normalised Water Difference index), Land Surface Temperature and vegetation productivity. When considering MODIS indices we used time series and phenological summaries. The model provides also uncertainty of the estimations. The derived dataset can then be used in the decision making process for the selection of sites for restoration, emissions estimation and accounting.