

Peatland properties influencing greenhouse Gas Emissions and Removals AUGER Project

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The EPA-funded AUGER project (2016-2019) aims at identifying the major drivers of peatland degradation in Ireland while investigating the characteristics of peatlands under various land uses and assessing the impact of management options on the C stock and greenhouse gas (GHG) dynamics of these ecosystems. Data from a nationwide survey will form the basis for a comparative multivariate assessment of a range of edaphic and hydro-ecological parameters. Within the project we use the ECOSSE model to assess the potential C-loss of the different peatland-land use combinations, and to compare the impact of management on carbon dynamics of land use on peatland in the Republic of Ireland.

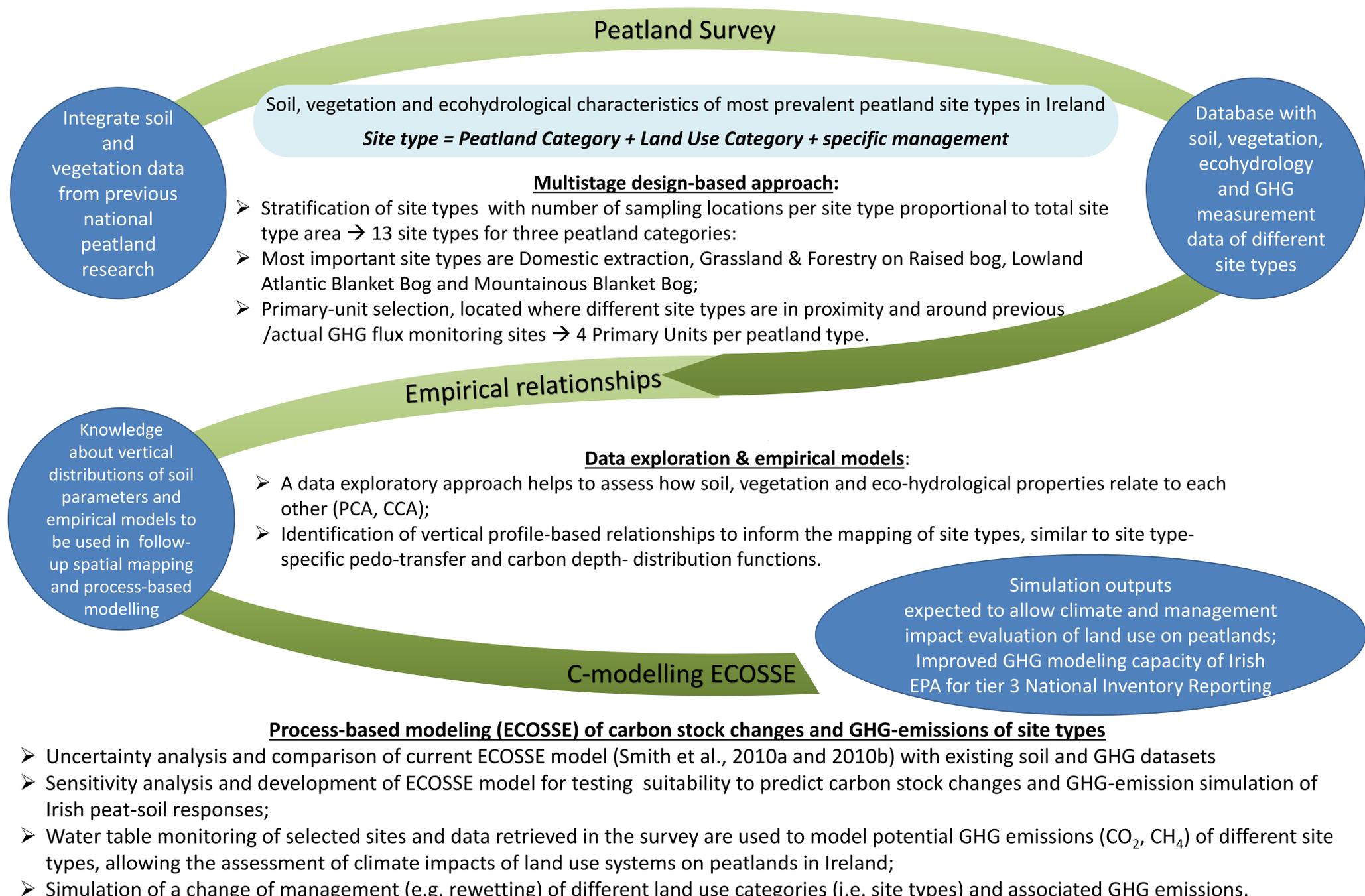
Background

Peatlands constitute around 20% of the land area of the Republic of Ireland and bare significant benefits and potentials in the form of several important ecosystem services. However they are prone to fast degradation when made available for other land use. The climate footprint of peatlands has been found to be strongly dependent on their management (Wilson et al., 2016a and 2016b; Renou-Wilson et al., 2016). The sustainable management of Ireland's peat soils is an environmental challenge but represent a significant opportunity as these soils can be managed to their strengths to benefit the society at large.

Objectives, outputs and components

- A database of field observations (C and N, Bulk density, peat depth, pH and nutrients) from representative peatland types, as a basis for a robust and representative national peatland database
- Further development of GHG-modeling capacities to assess the response of peatlands to changes in management and climate on a national scale
- Identification of a suitable model for estimation of the impact of anthropogenic interventions on peatlands
- Establishment of a long-term GHG monitoring site (with high resolution eco-hydrological monitoring) on drained and rewetted peatland sites
- Review for recommendations for further development of monitoring sites throughout Ireland
- Stakeholder engagement and workshop on measurement, monitoring and modeling of peatlands in Ireland

Methodological framework & methods



Wilson, D. et al. (2016a) Multi-year greenhouse gas balances at a rewetted temperate peatland. *Global Change Biology* 22, 4080-4095.
 Wilson, D. et al. (2016b) Greenhouse gas emission factors associated with rewetting of organic soils. *Mires and Peat* 17, Article 04, 01-28.
 Renou-Wilson, F. et al. (2016) To graze or not to graze? Four years GHG balances and vegetation composition from a drained and a rewetted organic soil under grassland. *Agriculture, Ecosystem and the Environment* 222, 156-170.
 Smith, J. et al. (2010a) Estimating changes in Scottish soil carbon stocks using ECOSSE. I. Model description and uncertainties. *Climate Research* 45, 179-192.
 Smith, J. et al (2010b) Estimating changes in Scottish soil carbon stocks using ECOSSE. II. Application. *Climate Research* 45, 193-205.