



Understanding multiple element budgets of peatlands – stoichiometry, enthalpy and entropy

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A few studies have considered the carbon budget of peatlands; fewer studies have considered the N budget of peat soils. None have considered both together, and furthermore, it is possible to include the oxygen; energy budgets; and even the transfer of entropy. By including the elemental and energy content of a range of organic matter transfers a range of types of flux the study can not only comment on the overall stoichiometry of the ecosystem but also constrain fluxes and predict the likely direction of change in response to ongoing climate change. This study has shown:

1. Over the 13-year study period, the total carbon balance varied between a net sink of -20 to - 91 tonnes C / km² / yr.

2. Overall, the total N budget of the peat ecosystem varies from -1.0 to +2.5 tonnes N/km²/yr, i.e. \in some years the ecosystem is a net source of N.

3. Oxidation state (C_{ox}) decreases through the profile with DOC and POC fluxes acting as additional means of removing oxid

4. By combining elemental and energy budgets it is possible to write stoichiometric equations for the ecosystem

5. By understanding the energy content, composition and stoichiometry of components of the organic matter it is possible to