



PhD position in soil science at SLU

How is soil organic matter formed?

A new Ph.D. studentship position is available with the Department of Forest Ecology and Management at the Swedish University of Agricultural Sciences, in Umeå, Sweden. The large pool of carbon stored as soil organic matter in soils of high-latitude ecosystems contains more organic C than all global vegetation and the atmosphere combined. This makes formation and decomposition of SOM an important feature of the global carbon balance. The extensive distribution of boreal forest soils in the northern hemisphere are particularly important. The aim of the PhD-project is to investigate how decomposition of different types of plant material influences the formation of soil organic matter and its accumulation in boreal forest soils. The decomposition of the plant material will be followed using multi-dimensional nuclear magnetic resonance (2D & 3D NMR) identifying exactly what molecular moieties in the organic matter that are decomposed over time and which constituents that remain. As it is the activity of soil microorganisms that drive decomposition application of 16S rRNA tracking and in depth metagenome characterization will give inferences about the metabolic capabilities of the active microorganisms. The information derived from this detailed analysis will finally allow to systematically test the multi decadal-old hypothesis that currently shape our view of saprotrophic decomposition of plant litter in boreal soils at early stages of soil organic matter formation.

For further questions contact Mats Öquist (mats.oquist@slu.se)

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