



Fine-scale organisation and C dynamics

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There is an emerging consensus that the decomposition of organic carbon in soil is regulated by fine-scale processes such as decomposer access to organic matter or the diffusion of extracellular enzymes and substrate. It is therefore important to characterise the spatial organisation of organic matter and decomposers within the soil pore network if the mechanisms underlying the regulation of C dynamics are to be quantified. However, diffusional processes have a homogenising effect, particularly at fine scales, which suggests that spatial organisation at these scales may not be important. Recent results have found very little convincing evidence for a link between the spatial proximity of organic matter and pore space in soil aggregates tend to corroborate this view. Furthermore, it has been found that regulatory controls occur at the micrometer scale where diffusion would strongly homogenise the environment. In order to reconcile these seemingly conflicting views, I would like to suggest that measurements of the relative locations of organic matter alone is not sufficient. Rather it may be necessary to characterise the distribution of organic matter at a higher analytical resolution in relation to microbial decomposers that have the relevant catabolic capacities.