



Mathematical and computer methods to model the interactions between soil multiscale structure and population dynamics : A review

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A growing field of multidisciplinary research addresses the interplay between soil biology and soil physics. In the context of the research project MEPSOM (Multiscale Modelling and Emergent Properties of Microbial degradation of Soil Organic Matter), I will focus my review on models dealing with the interactions between populations of microorganisms and the spatial organization of their multiscale physical habitat and access to resources. These models depend first on the type of available experimental data, but also on the type of available models. I propose an analysis and classification of the existing models in soil science according to their modelling tools and scales, as well as a comparison with consumer-resources modelling approaches investigated in other types of complex ecosystems.