



Modeling transformation of soil organic matter through the soil enzyme activity

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The sensitivity of soil heterotrophic respiration to changing environmental conditions is widely investigated nowadays but still remain extremely controversial. The mechanisms are still needed to reveal. In this work we model soil C and N biogeochemical cycles based on general principles of soil carbon and nitrogen dynamics with focusing on biochemical processes occurring in the soil based on well known classes of enzymes and organic compounds that they can transform. According to classic theories, exoenzymes and endoenzymes of bacteria and fungi as stable over a long period catalytic components play a significant role in degradation of plant and animal residues, decomposition of biopolymers of different sizes, humification processes and in releasing of labile compounds essential for the microorganism and plant growth and germination. We test the model regimes sensitivity to such environmental factors as temperature and moisture. Modeling the directions and patterns of soil biochemical activity is important for evaluation of soil agricultural productivity as well as its ecological functions.