



Microbial response to increasing temperatures during winter in arable soils

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Climate scenarios predict increasing temperatures and higher precipitation rates in late fall to early spring, both holding the potential to modify carbon and nutrient dynamics in soils by altering snow pack thickness and soil frost events. When soils are frozen, a small amount of unfrozen water allows microorganisms to remain active at temperatures down to -10°C . We carried out a field experiment on the microbial use of maize straw. We compared soils of two different clay contents and used latitude as a proxy for climate. Microcosms with sieved soil were mixed with chopped maize leaf straw (C/N 17) at a rate of 1 mg C g^{-1} dry soil, un-amended microcosms served as control. Results indicated that C-mineralization rates were independent from clay content. However, the microbial use of maize derived nitrogen was only increased in the soil with 13% clay compared to 33% clay in the other soil. Microbial responses to climate changes can be expected to be very specific due to characteristics of the soil and/or the location.