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Soil microbial degradation continues after soil organic matter stabilization

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The major part of soil organic matter (SOM) is stabilized from rapid mineralization. Its age is advanced and it is assumed to be protected from microbial degradation through mechanisms of inaccessibility and interaction with soil minerals. We show that microbial degradation continues during aging of stabilized SOM. We compiled available results on Δ^{14}C-derived organic carbon ages and δ^{15}N-derived stages of microbial degradation, and analyzed the isotopic difference between two soil density fractions ($<$1.6-1.8 g cm^{-3} = young, less stabilized; $>$1.6-1.8 g cm^{-3} = old, more stabilized). We detected a significant correlation between the fractions differential SOM carbon age and degree of microbial degradation. Limited knowledge of mutual exchange processes among SOM fractions and the characteristics of the Δ^{14}C technique per se make it difficult to interpret the data beyond these two soil fractions.