

Effect of oscillating oxidative environments on microbial degradation of soil organic matter

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There is increasing evidence that microorganisms play a critical role in the global carbon cycle on land. Microbial decomposition of organic matter in soil constitutes one of the largest fluxes of carbon in the terrestrial system. Microbial metabolism is largely controlled by environmental factors (e.g., temperature, oxygen concentration). In this study, we sought to understand the degradation of organic matter under oscillation of oxidative conditions. We conducted a long-term (40 days) soil incubation experiment using the IsoCaRB system [1], allowing us to simultaneously monitor microbially-respired CO₂ concentration and collect sequential samples of the respired CO₂ for off-line isotopic analyses (¹³C and ¹⁴C). In addition, genomic analyses of soil samples collected from each oxidative step will help characterize microbial community structure. We expect our findings to shed light on accessibility of soil organic matter for microbial communities under varying environmental conditions.

[1] Beaupré et al., (2016) L&O Method.
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