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The Interacting Controls of Pyrolysis Temperature and Plant Taxa on the Reactivity of Pyrogenic Organic Matter in a Northern Michigan Forest Soil

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Pyrogenic organic matter (PyOM) produced during forest fires is an important component of soil C cycling in boreal-temperate forest ecotones influencing both the rate of stable C input to soils and the microbial interaction with soil organic carbon (SOC) pools. We have an incomplete understanding of how projected changes to forest plant taxa dominance and fire frequency and intensity will interact to affect SOC dynamics. To uniquely determine PyOM-C and native soil C (NSC) turnover rates, we followed the fate of ^{13}C -enriched wood or PyOM (200, 300, 450, or 600°C) derived from red maple (RM) or jack pine (JP) wood in soil from a forest in northern Michigan. Our results show that while the first order control on PyOM stability and its interaction with NSC is pyrolysis temperature in this soil, wood taxa influenced both PyOM-C and NSC C MRT.

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2119 Wood Hall
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