

# Analysis of Soil Carbon Stocks Across Significant Regional Climate Gradients Clarifies Their Potential for Change

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Garten CT Jr. (2011) *Geoderma* 167-168:30-40

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## Objective

- Characterization of soil carbon turnover times along regional climate gradients to inform sensitivities of soil carbon stocks to projected future warming.

## New Science

- Established methods to measure standing carbon stocks in labile or stable carbon forms were used with estimates of carbon inputs to infer mean residence times of soil carbon across a climate gradient from cold northern to warm southern sites.
- Differences from soil texture characteristics modified the overall climate relationship.
- $^{13}\text{C}$  signatures of labile (POM) and stable (MOM) carbon showed a declining relationship with higher rates of soil carbon turnover.

## Significance

- Large labile carbon stocks in eastern United States Forests are likely to be vulnerable to loss under anticipated warming conditions of the future.

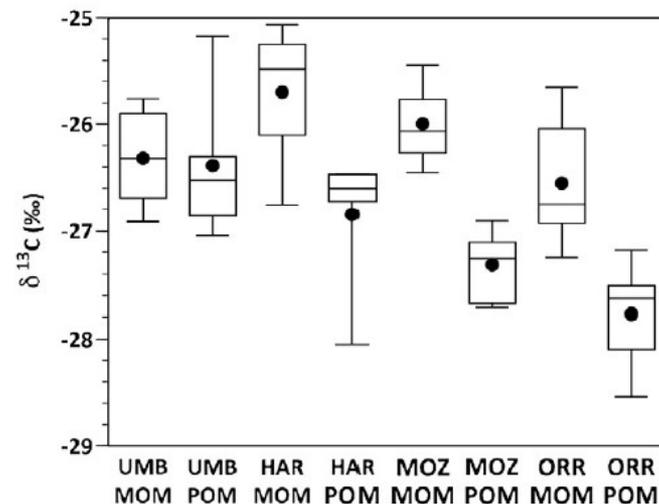
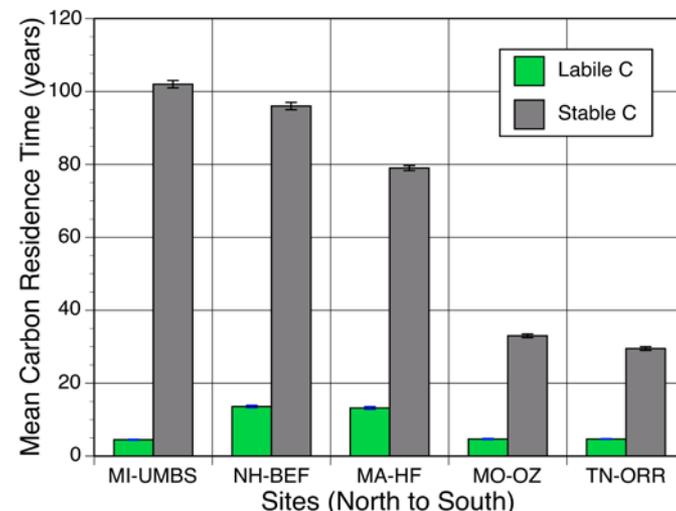


Fig. 2