



## Using 'bomb' radiocarbon to understand the terrestrial carbon cycle



**Susan Trumbore**

*Max Planck Institute for Biogeochemistry, Jena*

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How long does it take for a carbon atom assimilated by a plant to return to the atmosphere? The answer to this question allows us to predict where and how long terrestrial ecosystems can sequester carbon. It also turns out to be one of the biggest uncertainties in current global land models. Most of the questions center around processes that influence carbon cycling on annual to centennial timescales, including allocation of carbon in trees and the persistence of organic carbon in soils. Although too short to study using radioactive decay of radiocarbon, atomic weapons testing in the 1960s produced enough excess or 'bomb' radiocarbon that its incorporation in and loss from terrestrial ecosystems provides information on these timescales. This talk will demonstrate examples of what we have learned by tracking the flow of bomb radiocarbon through terrestrial ecosystems.

**Susan Trumbore** uses radiocarbon to trace the timescales associated with the flow of carbon through terrestrial ecosystems, with a long-standing interest in biosphere-atmosphere exchange and the role of disturbances in altering those fluxes. Current large collaborations include the Amazon Tall Tower Observatory (ATTO) Project in central Amazonia and the Tanguro Project in Mato Grosso, Brazil. She is also co-speaker for the German Collaborative Research Program AquaDiva, studying the critical zone in central Germany. In addition to leading the Processes Department at the Max-Planck Institute for Biogeochemistry, Trumbore maintains a 20% Professorship at UC Irvine. She is editor-in-chief of the new open-access journal *AGU Advances*, is a member of the National Academy of Science (USA) and the German Science Academy Leopoldina, and a Fellow of the AGU, the Geochemical Society and AAAS.

Zoom link: <https://bit.ly/2H3vxjT>  
password: carbonflux

