



High-temporal resolution radiocarbon analyses of dissolved organic matter in soils from a mountainous and temperate ecosystem

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A better understanding of the stability and turnover of soil dissolved organic matter (DOM) is key in order to predict the behavior and response of this dynamic carbon pool to climate and land use change. Radiocarbon is increasingly used to determine carbon turnover in carbon cycle studies. However, due to the nature of radiocarbon measurement as well as complexity of in-situ DOM collection, little comprehensive radiocarbon and turnover data is currently available. This project combines a high-resolution temporal DOM sequence for a mountainous (podzol) and temperate (cambisol) forest ecosystem with additional bulk- and fraction-specific soil organic matter analyses. DOM was collected bi-weekly on two sites of the Long-Term Forest Ecosystem Research (LWF) program of the Swiss Federal Institute for Forest, Snow and Landscape research (WSL) at four depths, and measured for radiocarbon content. These initial results indicate bi-weekly variation in radiocarbon signatures over the summer season and a strong soil-type dependent pattern in DO14C trend. Overall, these initial radiocarbon results indicate that DOM dynamics are seasonally variable, and thus could potentially be sensitive to future climate change. Furthermore, the DO14C trend helps to better understand the trends as can be seen in the bulk 14C signature of the soil organic matter. Detailed radiocarbon investigations of soil DOM may yield key insights into the complex carbon transport dynamics in different soil systems and their potential behavior under climate change scenarios.